

AD-A131 561 CONSTRUCTION OF 'TRAINING COST PER GRADUATE' FOR THE
NAVY COMPREHENSIVE C. (U) CENTER FOR NAVAL ANALYSES.
ALEXANDRIA VA NAVAL STUDIES GROUP B N ANGIER ET AL.
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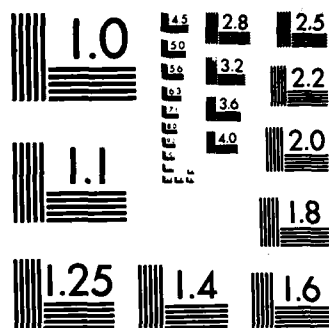
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CONSTRUCTION OF "TRAINING COST PER GRADUATE" FOR THE NAVY COMPREHENSIVE COMPENSATION AND SUPPLY STUDY

Bruce N. Angier
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CONSTRUCTION OF "TRAINING COST PER GRADUATE" FOR THE NAVY COMPREHENSIVE COMPENSATION AND SUPPLY STUDY

INTRODUCTION

The training costs per graduate reported in this memorandum were originally constructed for use in the Navy Comprehensive Compensation and Supply Study (NACCS) [1]. Because of this original purpose, the data used are sometimes quite restrictive (e.g., attrition data for 4YO NPS males), and sometimes quite detailed (e.g., a breakdown by mental group and educational certification). However, the methods used and the results generated have created enough interest in cognizant Navy organizations that it has been decided to report these results separate from the main publication in a form which can be more easily distributed to individuals with specific interests in these types of costing issues.

The structure of this report proceeds as follows. First, we present an overview summarizing our data sources and listing the calculations to be performed. Next, these data and calculations are described in more detail. Brief concluding remarks follow.

OVERVIEW

The NACCS model requires input data on the cost of initial specialized skill training for enlisted graduates of a given quality type (here, a combination of mental group and educational level) in a

given rating. Contact with key offices in Navy's training establishment revealed that cost data at this level of disaggregation were not available. Accordingly, we had to devise a procedure for constructing these costs. The procedure is described in this memorandum.

We proceed in two basic steps. First, using a costing model developed by the Training Analysis and Evaluation Group (TAEG), we obtained costs per graduate where available for each course in every rating pipeline. Since these costs are not differentiated by quality type, we further disaggregate them by combining individualized Navy Integrated Training Resources Administration System (NITRAS) data with Navy Enlisted Master Records (EMRs). From this we are able to compute school attrition as a function of quality and convert it to cost per graduate for each quality type.

The quality of students should also have other effects on training costs. For example, actual time spent under instruction and number of instructors required are probably functions of student quality. However, because of data shortcomings, we do not attempt to quantify these effects.

This discussion will consist of three parts. We begin with a short description of the data sets. This will be followed by an explanation of the calculations needed to construct cost per graduate. A summary and some concluding remarks will follow.

DATA SETS

There are three types of information necessary to construct our estimates of cost per graduate by quality type and rating. First, we must know which initial skill training courses are required for each rating and their proper sequence; that is, we must know the training pipelines. Next, we need the cost per graduate for each course in a pipeline. Lastly, we need to know the attrition from each course by quality type. The discussion below includes the source of our information and a short description of each data set.

Training pipeline information has been provided by CNET in the form of an official directive [2]. This directive lists the planned sequence of A-school courses for each rating. A sample listing for the STS rating is shown in table 1 (some data is intentionally left out). While this example is more complex than most rating pipelines, it does show the options we must consider in our cost calculations.

TABLE 1
SAMPLE A-SCHOOL PIPELINE

	<u>CIN</u>	<u>CDP</u>	<u>Location</u>	<u>Course length (days)</u>
1.	A-060-0011	6342	NEW LONDON	39
2.	A-130-0029	6172	FLEASWTRACENPAC	54
3a.	A-130-0188	6402	FLEASWTRACENPAC	26
3b.	A-130-0189	6401	FLEASWTRACENPAC	26
3c.	A-130-0190	6460	FLEASWTRACENPAC	33
3d.	A-130-0207	600A	FLEASWTRACENPAC	40
4.	A-100-0010	6277	NTC S. DIEGO	64

The items of interest are contained in the first and third columns. The former lists the sequence of courses in numerical order. Lower case letters are used to distinguish different tracks in a sequence. In this example then, we actually have four separate course sequences: 1, 2, 3a, 4; 1, 2, 3b, 4; 1, 2, 3c, 4; and 1, 2, 3d, 4. The third column lists the Course Data Processing (CDP) codes. With a few known exceptions, a CDP is unique to a rating and location. We use this fact to locate and extract data on costs and attrition for each course.

Our basic cost data is generated by the Incremental Costing Model developed by TAEG. (See [3]). The major advantage of the TAEG model is that it enables individual cost per graduate to accrue at the CDP level. Another feature of the model is its capability to permit changing the proportion of costs considered "fixed" or "variable" depending on the time horizon being examined. This means that the model can be used to estimate changes in costs for say, a one year surge in student throughput, or a permanent change in training load. We utilize cost estimates only for the latter case in NACCS. 1979 cost data are used in our calculations.

A final data set is needed to calculate attrition by quality type for each CDP. This proved to be a straightforward, but time consuming, procedure; we merged selected data from the EMR with the NITRAS Student Master File (SMF) [4] and from the resultant file were able to compute

enrollments, graduates and attrites. A subset of NITRAS data from 1979 is used here. It only includes non-prior service four year obligor males. By performing these computations for each quality type within individual CDPs we are able to derive cost per graduate as a function of quality.

CONSTRUCTION OF COST PER GRADUATE

Conceptually, cost per graduate should be simple to obtain — merely add up all costs incurred to create one graduate. However, complications arise because the NACCS model requires cost per graduate for each rating pipeline differentiated by quality types.

Differential Attrition

Let us first examine the differential attrition by quality type and how this influences cost per graduate. The Incremental Costing Model developed by TAEG bases cost computations on a construct called a work unit, which can be thought of as a student month. It is calculated as:

$$WU = K \times (G \times L + 0.5 \times E \times ATTR \times L + G \times L \times SR \times PR)$$

where K - Constant which converts weeks to months

G - Graduates

L - Course length in weeks

E - Enrollments

ATTR - Attrition rate (percent of enrollments)

SR - Setback rate (percent of graduates)

PR - Proportion of course repeated due to setback

0.5 - Assumption that, on average, attrites complete half the course before leaving

Some algebraic manipulation* converts this to work units per graduate:

$$\frac{WU}{G} = K \times L \times (1.0 + 0.5 \times (ATTR/(1.0-ATTR)) + SR \times PR)$$

This latter equation shows that the ratio of work units per graduate for two different quality types in the same CDP becomes a function of attrition and setback only. With regard to setback, we chose to leave the setback product fixed across quality types for a given CDP. Since the product, $SR \times PR$, is generally less than 0.05, the error in computing work unit ratios is under 1 percent. For our purposes, this "error" is even smaller inasmuch as setback due to such reasons as hospitalization or emergency leave would clearly not be quality-dependent.

Returning to the last equation, we calculate work units per graduate based on aggregate data (denoted by A), and work units per

* Divide by G, factor out L, and make use of the fact that $G = E \times (1.0-ATTR)$.

graduate based on different quality types (denoted by D_j). Then for each CDP, the set of D_j/A ratios represents proportional differences in training costs due to variances in attrition across quality types. For example, if there were three quality types and the computed ratios were 0.9, 1.0, and 1.1, it would indicate that the first group is 10 percent less expensive to train than the second, while the third group costs 10 percent more to train than the second. These ratios will be used to adjust the cost of each CDP to take into account the effect of differential attrition by different quality type individuals in that CDP.

Pipeline Cost

The cost per graduate for a given rating pipeline is logically an accumulation of the costs of individual courses which make up the pipeline. This is somewhat complicated, because pipeline courses have different costs and different attrition rates. The following example shows how we calculate these costs. Assume a pipeline contains courses XXX1, XXX2, and XXX3, with costs per graduate, C_1 , C_2 , and C_3 , and attrition rates, 0.25, 0.33, and 0.5 respectively. Then to obtain one pipeline graduate, it can be shown that four individuals must enter the pipeline. This results in obtaining three graduates of course XXX1, two from course XXX2, and one from course XXX3. The total cost to obtain a pipeline graduate becomes

$$C_1 \times \frac{1}{(1-0.5)(1-0.33)} + C_2 \frac{1}{(1-0.5)} + C_3 \times 1$$

or

$$C_1 \times 3 + C_2 \times 2 + C_3.$$

The inclusion of quality types in this computation is a direct extension of the preceding attrition discussion, with cost per graduate and attrition subscripted by quality type. For example, if there are P pipelines, 4 quality types, and a pipeline has n_i courses, and if $PCOST_{ij}$ is the cost of the i th pipeline for the j th quality type; $COEF_{ijk}$ is the coefficient calculated above for the i th rating, the j th quality type, and the k th course in the pipeline; and C_{ijk} is the course cost; then $PCOST_{ij} = \sum_{k=1}^{n_i} C_{ijk} COEF_{ijk}$.

C_{ijk} is the cost of a given course in a given pipeline (C_{ik}) multiplied by the quality weight ratios (D_j/A) developed earlier. This creates a course cost per graduate weighted by the differential attrition due to different quality types. $COEF_{ijk}$ is a representation of the number of graduates from course k of quality type j who are necessary to result in one graduate from the end of pipeline i .

A sample of the calculations for three different rating pipelines is contained in table 2. The pipelines are shown in figure 1. Although EWs are six-year obligors, the pipeline is used to show the effect of high attrition rates on cost per graduate. The complete data sets are

shown in appendix A, along with the programs which were used in the calculations.

This example brings up several points about the actual data manipulation.

- o Several pipelines have parallel CDPs. For example, EWs can attend BE&E at any one of three different locations. The data for these CDPs were aggregated into one created CDP, EW01.*

* Also, there are several CDPs, particularly in BE&E courses, where the course at Orlando was significantly shorter and cheaper than at other locations. Phone conversations with the school houses revealed that this is because these individuals are shipped to the other BE&E locations to finish their training. We handled this by not including the Orlando CDPs.

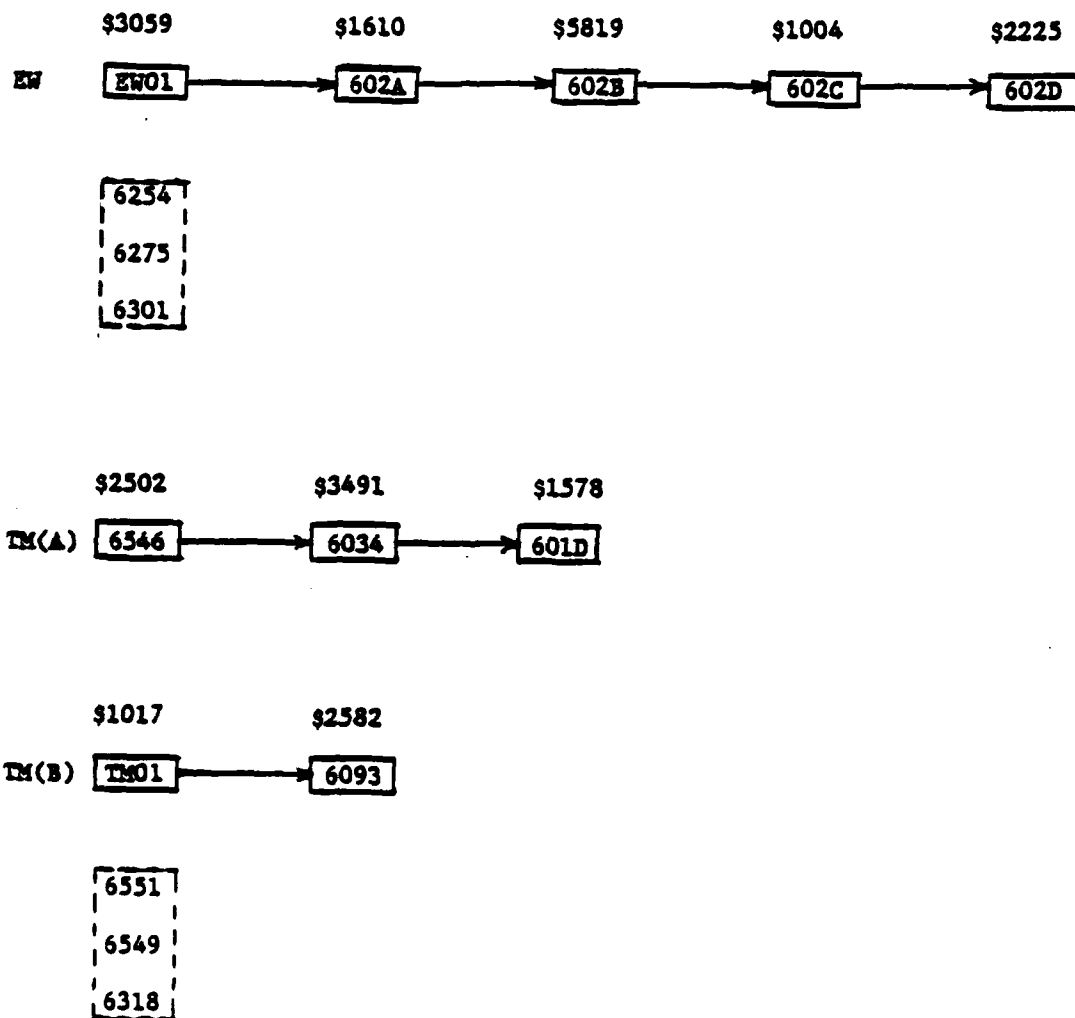


Figure 1: Example Pipelines and Overall Cost of Each CDP

TABLE 2

SAMPLE CALCULATIONS

Rating	Quality Type	Costs and Coefficients by CDP and Quality Type											Pipeline Cost by Quality Type
		4	5	6	7	8	9	10	11	12	13		
EW	1-3U HSG	3150	1.14	1596	1.11	5869	1.03	983	1.02	2194	1.00	14622	
	3L-5 HSG	3395	1.35	1747	1.10	5950	1.00	978	1.00	2170	1.00	15615	
	1-3U NHSG	3443	1.10	1586	1.08	5892	1.00	978	1.00	2170	1.00	14542	
	3L-5 NHSG	4253	1.50	1954	1.00	5674	1.00	978	1.00	2170	1.00	17140	
TH(A)	1-3U HSG	2417	1.10	3494	1.00	1557	1.00					7755	
	3L-5 HSG	2645	1.02	3359	1.00	1559	1.00					7654	
	1-3L NHSG	2667	1.18	3468	1.09	1672	1.00					8610	
	3L-5 NHSG	6732	1.13	3534	1.00	1559	1.00					12706	
TH(B)	1-3U HSG	961	1.00	2461	1.00							3421	
	3L-5 HSG	1060	1.06	2533	1.00							3654	
	1-3U NHSG	1025	1.08	2563	1.00							3673	
	3L-5 HSG	1111	1.20	2706	1.00							4039	

Notes: (1) Costs in columns 4, 6, 8, ... are the average costs from figure 1 multiplied by the quality weights in table A-6-1.

(2) Coefficients in columns 5, 7, 9, ... are

$$\text{Coef}_k = \frac{1}{\sum_{k=k-1}^{n_1} \text{PSURV}_{kk}} \quad k = 1, \dots, (n_1 - 1) \text{ if } n_1 > 1$$

$$\text{Coef}_{n_1} = 1$$

where PSURV is the probability of an individual of a particular quality type graduating a given CDP, and n_1 is the number of CDPs in the pipeline.

- o The programs that calculate the cost per graduate of the pipeline break the costing into two parts. First, they calculate the cost of getting one individual of a given quality type through a given CDP (C_{ijk}). Then the effects of attrition in later CDPs on the number of people necessary in a given CDP are calculated ($COEF_{ijk}$).
- o Finally, at first glance it would appear that the weighted average of the quality weights should be one (see table A-6-1). This is not the case because we had to merge data sets with different attrition rates at the same time the quality weights were calculated. For example, if attrition was higher in the data set used for attrition purposes than it was in the data used for costing, this would result in quality weights whose weighted average is higher than one.

SUMMARY

This paper reports the data sources, methods of calculation, and results of our effort to construct rating- and quality-specific costs per graduate from the Navy's initial specialized skill training (A-school) pipelines. While C and F schools were not examined here, the methods used could be applied to this training, though pipeline information is much harder to obtain for these schools. (On a related topic, six year obligor pipelines, see [5].) Also, these estimates

could be augmented by estimates of the OJT costs attributable to these individuals. In this way, these costs could be used as one step in the development of more refined estimates of replacement costs for Navy enlisted personnel. (For a first step along these lines, see [6].) Also, these costs could be combined with data on job performance (e.g. [7] and [8]) to begin a more complete analysis of cost-benefit tradeoffs between first-termers and careerists (e.g. [9]).

REFERENCES

- [1] Center for Naval Analyses Study, "Balancing Accession and Retention (Final Report of the Navy Comprehensive Compensation and Supply Study)," by Deborah Clay-Mendez, et al., Unclassified, forthcoming
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- [3] Training Analysis and Evaluation Group (TAEG) Technical Report No. 77, "Incremental Costing Model for Use with the CNET Per Capita Cost Data Base: System 1," (W. Swope, C. Yelvington, J. Corry), November 1979, CNET Orlando, Fla.
- [4] "Navy Integrated Training and Resources Administration System (NITRAS) Student Master File (SMF): Users Manual," MIISA Document No. 00062-020 UM-OB, CNET MIISA Code 22, NAS Pensacola, Fla. 32508
- [5] Rahab, Inc., "The Six-Year Obligor Pipeline: An Interim Report," by David Rodney and Kenneth Goosens, May 1982, Falls Church, Va.
- [6] Center for Naval Analyses, Memorandum (CNA)82-1357, "Replacement Costs for Navy First-Term Personnel by Rating," by Ellen Balis and Deborah Clay-Mendez, Unclassified, 3 September 1982
- [7] Rand Corporation R-2191-ARPA, "Specialty Training and the Performance of First-Term Enlisted Personnel," by R. M. Gay and M. J. Albrecht, Unclassified, Apr 1979
- [8] CNA, Professional Paper 363, "Personnel Substitution and Navy Readiness," by Alan J. Marcus, Unclassified, Oct 1982
- [9] CNA, Memorandum 82-1525, "The Growth of Productivity in the First Term," by Aline Quaster and Alan J. Marcus, Unclassified, 8 Oct 1982

APPENDIX A
DATA AND PROGRAMS

TABLE A-1
DATA USED IN THE CALCULATION OF COST PER CDP
(TAEG DATA)

<u>CDP</u>	<u>Enrols</u>	<u>Course Length</u>	<u>Attrites</u>	<u>Attrition Rate</u>	<u>Setback Rate</u>	<u>Setback Proportion</u>	<u>Cost per Graduate</u>
EL01	593	60		0.04	0.05	0.10	3043
CE01	472	38		0.13	0.00	0.10	1861
CE02	203	56		0.06	0.03	0.10	3439
CP01	319	84		0.05	0.03	0.10	5403
CTP1	703	57		0.13	0.00	0.10	2821
CS01	1003	55		0.11	0.00	0.10	2700
E101	69	73		0.08	0.03	0.10	4121
EP01	2202	54		0.16	0.00	0.10	2662
EC01	498	56		0.03	0.05	0.10	4514
ETN1	1409	50		0.16	0.00	0.10	2450
ETD2	937	145		0.16	0.40	0.10	8163
ET31	124	63		0.12	0.00	0.10	3115
ET01	1210	64		0.16	0.00	0.10	3140
ET02	931	191		0.16	0.40	0.10	11032
ET11	313	50		0.12	0.00	0.10	2412
ET13	131	117		0.16	0.40	0.10	6561
E101	756	62		0.14	0.00	0.10	3059
FT01	683	63		0.16	0.00	0.10	3070
FTN1	599	64		0.16	0.00	0.10	3166
FT01	337	62		0.13	0.00	0.10	3093
GN01	416	36		0.16	0.00	0.10	1768
GNP1	433	36		0.15	0.00	0.10	1772
GPT1	287	38		0.16	0.00	0.10	1865
GSE1	216	57		0.16	0.00	0.10	2810
GSP1	553	35		0.13	0.00	0.10	1736
HT01	1437	21		0.02	0.01	0.10	1712
HT02	2239	55		0.04	0.01	0.10	2205
IC01	505	57	113	0.18	0.00	0.10	2932
SP01	757	42		0.07	0.14	0.10	2213
SB01	278	59		0.02	0.03	0.10	3427
TP01	765	21		0.12	0.00	0.10	1017
LT01	248	77		0.05	0.04	0.10	4645
1300	1742	42	49	0.01	0.00	0.10	1602
1306	1739	171	426	0.20	0.00	0.10	15869
3157	52	84	5	0.09	0.15	0.10	7967
3522	237	35	7	0.03	0.10	0.10	2142
5260	1871	39	803	0.17	0.15	0.10	2427
6001	804	40	35	0.04	0.12	0.10	1919
6005	621	42	43	0.06	0.15	0.10	2128

TABLE A-1 (Cont'd)

<u>CDP</u>	<u>Enrols</u>	<u>Course Length</u>	<u>Attrites</u>	<u>Attrition Rate</u>	<u>Serback Rate</u>	<u>Serback Proportion</u>	<u>Cost per Graduate</u>
6006	136	42	16	0.11	0.10	0.10	2598
6010	128	26	13	0.09	0.01	0.10	1672
6010	135	26	13	0.09	0.01	0.10	1678
6016	2073	4	1	0.00	0.00	0.10	1461
602A	427	19	23	0.05	0.20	0.10	1610
6028	402	68	22	0.05	0.20	0.10	5819
602C	358	12	20	0.05	0.10	0.10	1004
602D	340	26	19	0.05	0.30	0.10	2225
6020	163	43	47	0.22	0.25	0.10	3983
6027	485	75	37	0.07	0.15	0.10	3614
603A	288	33	6	0.02	0.15	0.10	2688
603B	257	26	6	0.02	0.15	0.10	2116
603F	63	19	1	0.02	0.00	0.10	2203
6034	135	54	13	0.09	0.00	0.10	3491
6036	120	40	12	0.09	0.02	0.10	2700
604A	64	68	1	0.02	0.20	0.10	5419
604B	61	26	1	0.02	0.15	0.10	2064
604C	61	19	1	0.02	0.05	0.10	1486
604D	61	26	1	0.02	0.06	0.10	2021
6041	68	112	12	0.15	0.15	0.10	10312
6046	64	112	2	0.03	0.01	0.10	7669
6047	44	105	3	0.06	0.01	0.10	7078
605A	16	68	1	0.04	0.28	0.10	6862
605B	15	19	1	0.04	0.09	0.10	1900
605C	14	26	1	0.04	0.15	0.10	2676
6053	248	84	55	0.18	0.25	0.10	6801
6057	1146	49	214	0.16	0.50	0.10	2368
6059	823	42	51	0.06	0.10	0.10	1943
6061	226	56	27	0.11	0.10	0.10	2945
6065	405	168	59	0.13	0.10	0.10	9068
6068	407	70	51	0.12	0.15	0.10	4265
6070	2064	46	42	0.02	0.30	0.10	2680
6073	896	56	29	0.03	0.21	0.10	3074
6076	12	126	4	0.25	0.05	0.10	15714
6077	25	77	7	0.22	0.05	0.10	7928
6078	31	74	7	0.18	0.01	0.10	4397
6079	117	56	3	0.03	0.03	0.10	3253

TABLE A-1 (Cont'd)

<u>CDP</u>	<u>Enrols</u>	<u>Course Length</u>	<u>Attrites</u>	<u>Attrition Rate</u>	<u>Setback Rate</u>	<u>Setback Proportion</u>	<u>Cost per Graduate</u>
6081	266	60	9	0.03	0.05	0.10	3421
6082	133	59	2	0.01	0.03	0.10	3755
6083	144	77	8	0.05	0.04	0.10	5063
6093	298	40	29	0.09	0.02	0.10	2582
6097	213	56	9	0.04	0.04	0.10	5649
6102	893	49	42	0.04	0.40	0.10	2132
6106	1012	55	54	0.05	0.00	0.10	2134
6108	381	75	8	0.02	0.01	0.10	3488
6115	311	82	22	0.07	0.10	0.10	3800
6119	960	21	23	0.02	0.00	0.10	1195
6120	477	21	7	0.01	0.03	0.10	2751
6125	2014	42	67	0.03	0.30	0.10	2337
6131	532	154	54	0.09	0.25	0.10	8080
6144	2598	56	421	0.14	0.06	0.10	3961
6146	929	119	288	0.24	0.65	0.10	10230
6149	179	84	9	0.05	0.03	0.10	5667
6161	248	105	12	0.05	0.50	0.10	7253
6167	533	56	49	0.08	0.05	0.10	3855
6182	194	69	9	0.04	0.15	0.10	3615
6183	258	66	18	0.07	0.20	0.10	3422
6210	2370	12	63	0.03	0.07	0.10	452
6212	809	12	21	0.03	0.07	0.10	452
6213	1492	12	39	0.03	0.07	0.10	455
6214	2134	12	56	0.03	0.07	0.10	451
6215	450	12	12	0.03	0.07	0.10	453
6216	188	12	5	0.03	0.07	0.10	452
6217	408	12	11	0.03	0.07	0.10	453
6218	2905	9	77	0.03	0.07	0.10	339
6220	923	9	24	0.03	0.07	0.10	340
6221	545	9	14	0.03	0.07	0.10	338
6222	885	9	23	0.03	0.07	0.10	339
6224	1000	3	26	0.03	0.07	0.10	113
6226	1962	12	52	0.03	0.07	0.10	451
6230	1937	13	563	0.23	0.00	0.10	1435
6231	666	14	193	0.23	0.00	0.10	1477
6232	393	15	114	0.23	0.00	0.10	1524
6233	639	13	186	0.23	0.00	0.10	1435
6235	2096	15	609	0.23	0.00	0.10	1525
6236	0	15	0	0.23	0.00	0.10	1500

TABLE A-1 (Cont'd)

<u>CDP</u>	<u>Enrols</u>	<u>Course Length</u>	<u>Attrites</u>	<u>Attrition Rate</u>	<u>Setback Rate</u>	<u>Setback Proportion</u>	<u>Cost per Graduate</u>
6237	325	32	94	0.23	0.00	0.10	1392
6239	1135	125	361	0.24	0.00	0.10	6915
6240	398	125	127	0.24	0.00	0.10	6917
6241	238	125	76	0.24	0.00	0.10	6926
6242	388	95	123	0.24	0.00	0.10	5250
6245	306	138	27	0.08	0.25	0.10	8013
6248	453	64	80	0.15	0.00	0.10	3062
6249	370	66	65	0.15	0.00	0.10	3153
6254	303	67	53	0.15	0.00	0.10	3202
6255	415	50	73	0.15	0.00	0.10	2391
6256	428	52	76	0.15	0.00	0.10	2484
6257	226	63	40	0.15	0.00	0.10	3008
6258	1318	57	233	0.15	0.00	0.10	2723
6259	179	40	32	0.15	0.00	0.10	1913
6260	3175	22	283	0.08	0.10	0.10	2845
6261	1658	22	44	0.03	0.10	0.10	736
6262	4226	22	167	0.04	0.10	0.10	1830
6269	261	57	58	0.18	0.00	0.10	2931
6270	120	39	27	0.18	0.00	0.10	2012
6271	287	47	64	0.18	0.00	0.10	2423
6272	279	49	63	0.18	0.00	0.10	2517
6273	884	50	158	0.18	0.00	0.10	2571
6274	505	57	113	0.18	0.00	0.10	2932
6275	205	62	46	0.18	0.00	0.10	3195
6276	628	54	141	0.18	0.00	0.10	2779
6277	427	56	96	0.18	0.00	0.10	2882
6278	542	98	285	0.34	0.25	0.10	8864
6280	401	5	1	0.00	0.01	0.10	266
6281	392	5	1	0.00	0.01	0.10	264
6282	315	5	1	0.00	0.01	0.10	264
6284	742	5	1	0.00	0.10	0.10	271
6286	327	60	12	0.04	0.05	0.10	2736
6287	38	73	0	0.00	0.03	0.10	4004
6288	145	59	5	0.03	0.03	0.10	3126
6289	86	56	11	0.11	0.03	0.10	3693
6290	104	77	5	0.05	0.04	0.10	4065
6291	140	84	6	0.04	0.03	0.10	5066

TABLE A-1 (Cont'd)

<u>CDP</u>	<u>Enrols</u>	<u>Course Length</u>	<u>Attrites</u>	<u>Attrition Rate</u>	<u>Setback Rate</u>	<u>Setback Proportion</u>	<u>Cost per Graduate</u>
6252	285	56	5	0.02	0.06	0.10	3666
6257	0	2	0	0.00	0.00	0.10	100
6301	444	126	124	0.29	0.50	0.10	8840
6302	751	87	243	0.24	0.25	0.10	7069
6303	1196	25	50	0.07	0.00	0.10	1253
6304	379	28	28	0.07	0.00	0.10	1403
6305	371	29	28	0.07	0.00	0.10	1458
6306	248	55	19	0.07	0.00	0.10	2772
6307	173	34	13	0.07	0.00	0.10	1703
6308	324	53	24	0.07	0.00	0.10	2660
6309	352	51	26	0.07	0.00	0.10	2561
6310	281	29	21	0.07	0.00	0.10	1456
6311	279	30	21	0.07	0.00	0.10	1507
6312	223	27	17	0.07	0.00	0.10	1358
6313	213	27	16	0.07	0.00	0.10	1359
6314	139	30	10	0.07	0.00	0.10	1504
6315	656	25	49	0.07	0.00	0.10	1456
6318	371	20	20	0.07	0.00	0.10	1801
6319	129	42	8	0.06	0.10	0.10	3873
6320	493	34	19	0.04	0.15	0.10	2772
6337	122	77	17	0.12	0.00	0.10	6067
6339	1227	55	51	0.04	0.01	0.10	2263
6341	269	77	82	0.23	0.30	0.10	11375
6342	691	39	143	0.17	0.10	0.10	2476
6350	102	51	23	0.18	0.00	0.10	2628
6352	178	49	40	0.18	0.00	0.10	2516
6355	74	59	18	0.18	0.00	0.10	3027
6358	229	62	51	0.18	0.00	0.10	3187
6359	230	60	52	0.18	0.00	0.10	3085
6360	153	56	34	0.18	0.00	0.10	2885
6361	115	39	26	0.18	0.00	0.10	2003
6362	150	36	34	0.18	0.00	0.10	1853
6363	174	36	39	0.18	0.00	0.10	1848
6366	390	56	69	0.15	0.00	0.10	2674
6368	259	36	46	0.15	0.00	0.10	1721
6369	172	37	30	0.15	0.00	0.10	1773
6370	266	36	47	0.15	0.00	0.10	1720

TABLE A-1 (Cont'd)

<u>CDP</u>	<u>Enrols</u>	<u>Course Length</u>	<u>Attrites</u>	<u>Attrition Rate</u>	<u>Setback Rate</u>	<u>Setback Proportion</u>	<u>Cost per Graduate</u>
6371	981	39	204	0.17	0.10	0.10	2475
6372	137	56	24	0.15	0.00	0.10	2682
6376	356	75	8	0.02	0.01	0.10	3486
6377	532	75	41	0.07	0.15	0.10	3618
6378	213	82	15	0.07	0.10	0.10	3796
6380	1816	22	9	0.00	0.00	0.10	1363
6381	809	14	2	0.00	0.00	0.10	970
6400	112	82	22	0.07	0.10	0.10	3797
6403	605	30	45	0.07	0.00	0.10	1504
6404	111	58	8	0.07	0.00	0.10	2904
6405	104	24	8	0.07	0.00	0.10	1201
6406	51	25	4	0.07	0.00	0.10	1244
6407	338	28	25	0.07	0.00	0.10	1409
6409	266	64	60	0.18	0.00	0.10	3293
6410	90	67	20	0.18	0.00	0.10	3465
6412	219	64	49	0.18	0.00	0.10	3296
6413	136	63	24	0.15	0.00	0.10	3002
6414	397	64	70	0.15	0.80	0.10	3057
6415	209	63	37	0.15	0.00	0.10	3014
6417	328	63	58	0.15	0.00	0.10	3013
6420	564	194	106	0.16	0.40	0.10	11365
6421	475	152	90	0.16	0.40	0.10	8546
6423	66	117	12	0.16	0.40	0.10	6573
6424	65	117	12	0.16	0.40	0.10	6547
6428	367	187	69	0.16	0.40	0.10	10525
6429	462	138	87	0.16	0.40	0.10	7765
6447	41	53	3	0.07	0.00	0.10	2645
6450	50	74	9	0.15	0.00	0.10	3553
6458	53	63	4	0.07	0.15	0.10	6206
6477	250	42	8	0.03	0.02	0.10	2642
6486	2220	49	211	0.09	0.00	0.10	3198
6487	1611	21	3	0.00	0.10	0.10	530
6489	834	20	56	0.06	0.00	0.10	1791
6492	2414	39	133	0.05	0.00	0.10	1301
6493	2394	29	24	0.01	0.00	0.10	989
6501	2508	42	275	0.09	0.25	0.10	1617
6506	1325	64	123	0.12	0.02	0.10	3104
6511	800	12	8	0.01	0.10	0.10	350

TABLE A-1 (Cont'd)

<u>CDP</u>	<u>Enrols</u>	<u>Course Length</u>	<u>Attrites</u>	<u>Attrition Rate</u>	<u>Setback Rate</u>	<u>Setback Proportion</u>	<u>Cost per Graduate</u>
6512	263	28	7	0.03	0.10	0.10	2423
6513	436	46	20	0.04	0.10	0.10	3507
6515	1726	77	131	0.07	0.25	0.10	3683
6516	672	63	59	0.08	0.10	0.10	3069
6517	1288	49	75	0.06	0.20	0.10	2470
6518	1814	63	161	0.08	0.25	0.10	2939
6519	505	70	37	0.07	0.10	0.10	5060
6521	319	41	6	0.02	0.12	0.10	2423
6522	597	52	24	0.04	0.10	0.10	2236
6527	391	25	4	0.01	0.10	0.10	2359
6528	584	45	30	0.05	0.14	0.10	1774
6530	209	64	10	0.05	0.20	0.10	3579
6537	491	81	133	0.21	0.70	0.10	4808
6542	95	28	7	0.07	0.00	0.10	1408
6543	121	31	14	0.07	0.00	0.10	1555
6544	149	40	13	0.18	0.00	0.10	2052
6545	223	35	39	0.15	0.00	0.10	1667
6546	308	39	64	0.17	0.20	0.10	2502
6549	158	21	35	0.18	0.00	0.10	1076
6551	236	21	42	0.15	0.00	0.10	1003
6568	63	19	1	0.02	0.00	0.10	2203
6569	60	19	1	0.01	0.00	0.10	2841
6570	45	19	1	0.02	0.00	0.10	3170
6571	37	19	0	0.01	0.00	0.10	4250
6572	59	19	1	0.02	0.00	0.10	2681
6573	106	19	2	0.02	0.00	0.10	3338
6574	60	19	1	0.02	0.00	0.10	3539
6582	45	19	1	0.01	0.00	0.10	4027
8562	100	22	2	0.02	0.00	0.10	4171
8563	450	28	2	0.00	0.00	0.10	2789
8564	210	42	0	0.00	0.00	0.10	4230
8565	5	7	1	0.17	0.00	0.10	10912

TABLE A-2

ATTRITION DATA FOR 4YO NPS MALES IN A SCHOOL
BY CDP AND QUALITY TYPE (SMF Data)

CDP	Attrites and Enrols by Quality Type				Attrition Rates by Quality Type			
	HSG		NSHG		HSG		NSHG	
	1-3U	3L-5	1-3U	3L-5	1-3U	3L-5	1-3U	3L-5
EU01	2	6	1	1	.0090	.0400	.0323	.0588
CE01	222	150	31	17	.1026	.2540	.2500	.4444
CE02	117	63	20	9	.0909	.0426	.1667	.0000
CP01	110	47	12	4	.0246	.0288	.1600	.0625
CTM1	122	104	23	16	.0851	.1923	.2162	.0000
CS01	388	26	37	1	.0799	.1395	.2400	.0000
EAO1	576	43	75	5	.0556	.0000	.0000	.0000
EP01	54	3	1	1	.1249	.3004	.5800	.5875
EC01	1553	456	214	20	.0299	.0079	.0357	.0385
ETM1	134	126	22	26	.0619	.3333	.1111	.0000
ETM2	986	6	5	0	.2486	.4000	.5000	.0000
ETS1	228	2	3	0	.3333	.0000	.0000	.0000
ET01	517	5	6	0	.2284	.2097	.3665	.3333
ET02	1	0	0	0	.1857	.2542	.2705	.7500
ET11	3	1	0	1	.0626	.3000	.2857	.9000
ET12	288	13	70	1	.1071	.1667	.2222	.0000
EW01	1261	62	151	3	.1852	.2857	.3026	.5000
FTG1	223	15	33	3	.2735	.3143	.4741	.6000
FTM1	1201	55	122	4	.2284	.2821	.3178	.4286
	30	3	12	1				
	475	10	42	1				
	9	1	4	0				
	84	6	18	0				
	70	6	23	3				
	378	21	76	6				
	125	11	55	3				
	457	35	116	5				
	98	11	34	3				
	429	35	107	7				

TABLE A-2 (Cont'd)

CDP	Attrites and Enrols by Quality Type				Attrition Rates by Quality Type			
	HSG		NHSB		HSG		NHSB	
	1-30	3L-5	1-30	3L-5	1-30	3L-5	1-30	3L-5
FT01	29	3	10	0	.1593	.2308	.2439	.0000
GP01	182	13	41	0	.2275	.2841	.4732	.5333
GM01	43	25	53	24	.2442	.2955	.3836	.7391
GT01	189	82	112	45	.2152	.4762	.5823	.7059
GSE1	21	13	28	17	.2929	.4000	.3333	.9000
GSM1	86	44	73	23	.1374	.1667	.1778	.2500
HT01	17	20	46	24	.0106	.0051	.0270	.0776
HT02	79	42	75	34	.0429	.0423	.1024	.1507
IC01	29	2	8	1	.0970	.1561	.3372	.5000
SP01	99	5	24	1	.0345	.1098	.1287	.1324
SB01	29	2	8	1	.0145	.0220	.0400	.0833
TP01	211	12	45	4	.0183	.1842	.1333	.2500
	7	2	7	9				
	661	395	255	116				
	38	21	39	22				
	886	486	381	146				
	65	40	25	16				
	678	284	86	32				
	6	9	22	9				
	172	82	171	68				
	1	2	1	1				
	69	91	25	12				
	2	21	6	9				
	105	114	45	36				
LT01	3	2	2	2	.0435	.0253	.0909	.1333
130C	69	79	22	15	.0201	.0000	.0000	.0000
130E	61	0	0	0	.3158	.0000	.3125	.0000
3197	3032	13	20	1	.0270	.1667	.4000	.9000
3522	685	0	5	0	.0000	.0000	.0000	.5000
5206	2169	7	16	1	.1273	.2409	.3138	.4475
	1	1	2	2				
	37	6	5	2				
	0	0	0	2				
	7	10	3	4				
	243	113	254	132				
	1909	469	537	295				

TABLE A-2 (Cont'd)

CDP	Attrites and Enrols by Quality Type				Attrition Rates by Quality Type			
	HSG		NHSB		HSG		NHSB	
	1-30	31-5	1-30	31-5	1-30	31-5	1-30	31-5
6001	3	17	5	12	.0126	.1024	.1004	.1935
6005	239	146	83	62				
	6	4	15	8	.0441	.0741	.1136	.1600
6006	136	54	132	50				
	0	5	7	1	.0000	.1786	.1795	.0556
6010	36	28	35	18				
	0	1	0	0	.0000	.0476	.0000	.0000
6011	2	21	2	2				
	0	0	1	0	.0000	.0000	.0833	.0000
6016	17	8	12	2				
	2	1	3	1	.0009	.0008	.0073	.0025
6021	2203	1193	410	404				
	10	3	1	1	.0336	.1875	.0204	.3333
6022	298	16	49	3				
	17	1	3	0	.0561	.0909	.0732	.0000
6023	257	11	41	1				
	2	0	0	0	.0082	.0000	.0000	.0000
6024	245	11	37	0				
	2	0	0	0	.0230	.0000	.0000	.0000
6028	87	6	5	0				
	13	27	6	3	.1529	.2596	.4286	.6000
6027	85	104	14	5				
	20	7	10	1	.0548	.2333	.1408	.1111
6031	345	30	71	9				
	7	0	0	1	.0332	.0000	.0000	.9000
6032	211	9	33	1				
	0	0	0	0	.0000	.0000	.0000	.0000
6033	184	8	28	1				
	0	0	0	0	.0000	.0000	.0000	.0000
6034	2	3	0	1				
	10	1	5	3	.0517	.0192	.0781	.1111
6036	109	52	64	27				
	2	22	5	14	.1000	.1528	.2083	.2545
6041	20	144	24	55				
	1	0	0	0	.0172	.0000	.0000	.0000
6042	58	1	8	1				
	1	0	0	0	.0152	.0000	.0000	.0000
	52	1	6	1				

TABLE A-2 (Cont'd)

COP	Attrites and Enrols by Quality Type				Attrition Rates by Quality Type			
	HSG		NSHG		HSG		NSHG	
	1-3U	3L-5	1-3U	3L-5	1-3U	3L-5	1-3U	3L-5
6040	0	0	0	0	.0000	.0000	.0000	.0000
6040	50	1	5	1	.0000	.0000	.0000	.0000
6041	0	0	0	0	.0000	.0000	.0000	.0000
6041	38	1	5	1	.0000	.1250	.2069	.3333
6046	23	16	25	6	.0000	.0582	.1667	.1111
6046	0	1	2	1	.0000	.0909	.0000	.4000
6047	34	17	12	9	.0000	.0582	.0000	.0000
6050	0	1	0	2	.0000	.0582	.0000	.0000
6050	23	11	12	5	.0000	.0000	.0000	.0000
6050	25	1	0	0	.0000	.0000	.0000	.0000
6050	317	17	24	1	.0000	.0000	.0000	.0000
6050	8	0	0	0	.0000	.0000	.0000	.0000
6050	265	14	20	1	.0000	.0000	.0000	.0000
6050	7	0	0	0	.0295	.0000	.0000	.0000
6053	237	14	17	0	.1755	.1579	.4667	.1667
6053	33	9	14	1	.0517	.1608	.1616	.3333
6057	188	57	30	6	.0281	.0139	.0925	.0500
6057	17	100	16	40	.0654	.0870	.3235	.2500
6059	325	622	95	120	.1250	.0000	.0000	.0000
6059	10	2	13	2	.1004	.2353	.4211	.4194
6061	356	144	132	40	.0128	.0907	.0727	.0625
6061	10	4	11	1	.0266	.0577	.1356	.0000
6065	153	46	34	4	.2857	.0000	.6667	.9000
6065	1	0	0	0	.2500	.0769	.6000	.6667
6068	8	1	0	0				
6068	23	32	32	13				
6070	229	136	76	31				
6070	28	34	8	2				
6073	1488	375	110	32				
6073	17	9	8	0				
6076	639	156	55	16				
6076	2	0	4	1				
6077	7	5	6	1				
6077	2	1	3	2				
6077	8	13	5	3				

TABLE A-2 (Cont'd)

CDP	Attrites and Enrols by Quality Type				Attrition Rates by Quality Type			
	HSG		NHSG		HSG		NHSG	
	1-3U	3L-5	1-3U	3L-5	1-3U	3L-5	1-3U	3L-5
6078	2	0	0	0	.1111	.0000	.0000	.0000
6079	18	1	0	0				
	3	0	2	0	.0484	.0000	.1333	.0000
6081	62	32	15	2				
	2	4	1	0	.0172	.0460	.0833	.0000
6082	116	87	12	8				
	1	2	0	1	.0222	.0385	.0000	.1111
6083	45	52	16	5				
	2	2	1	2	.0385	.0299	.0714	.1212
6093	52	67	14	11				
	0	3	1	2	.0000	.0556	.0769	.1667
6097	24	54	13	12				
	2	1	1	0	.0278	.0139	.0556	.0000
6102	72	72	18	14				
	7	7	10	5	.0121	.0673	.0621	.1667
6106	520	104	161	30				
	18	7	15	9	.0403	.0271	.0758	.1098
6108	447	258	158	82				
	4	0	0	0	.0142	.0000	.0000	.0000
6115	281	20	43	2				
	2	2	7	3	.0204	.0370	.1296	.2727
6119	98	54	54	11				
	7	2	6	2	.0150	.0072	.0280	.0260
6120	467	277	214	53				
	0	0	1	1	.0000	.0000	.0222	.0435
6125	194	118	45	23				
	15	7	19	16	.0217	.0116	.0514	.0641
6131	692	604	370	281				
	53	5	8	0	.1021	.1189	.1176	.0000
6144	519	36	62	1				
	120	103	100	64	.0925	.1090	.2740	.3404
6146	1297	545	365	186				
	247	19	56	0	.2359	.3200	.3275	.0000
6149	1047	50	171	1				
	1	2	3	1	.0127	.0282	.2000	.1111
6161	75	71	15	5				
	17	0	0	0	.0702	.0000	.0000	.0000
	242	5	20	0				

TABLE A-2 (Cont'd)

CDP	Attrites and Enrols by Quality Type				Attrition Rates by Quality Type			
	HSG		NHSG		HSG		NHSG	
	I-30	3L-5	I-30	3L-5	I-30	3L-5	I-30	3L-5
6167	24	4	8	1	.6937	.0509	.1455	.1111
6182	447	44	55	9	.0455	.0000	.0952	.1250
	3	0	2	1				
	66	31	21	8				
6183	3	1	2	2	.0469	.0303	.0741	.1176
6210	64	33	27	17	.0280	.0153	.0441	.0748
	16	15	10	11				
6212	571	978	227	147	.0118	.0415	.0870	.0509
	1	10	4	5				
6213	85	241	46	55	.0200	.0269	.0556	.0707
	3	11	5	7				
6214	150	409	90	99	.0175	.0399	.0833	.0496
	4	23	11	6				
6215	228	576	132	121	.0161	.0370	.0357	.0000
	1	1	1	0				
6216	62	27	28	11	.0000	.0476	.0000	.1667
	0	1	0	1				
6217	43	21	11	6	.0272	.0208	.0571	.0769
	2	1	2	1				
6218	72	48	35	13	.0137	.0157	.0394	.0132
	10	6	14	1				
6220	730	383	355	76	.0174	.0000	.0530	.1429
	7	0	2	1				
6221	403	40	151	7	.0037	.0417	.0395	.0000
	1	1	3	0				
6222	268	24	76	6	.0062	.0000	.0678	.0000
	2	0	4	0				
6224	324	15	55	5	.0615	.0698	.0811	.0000
	23	3	5	0				
6226	374	43	111	8	.0056	.0170	.0992	.1260
	1	7	13	16				
6230	179	412	131	127	.1272	.1881	.3365	.4375
	170	15	141	7				
6231	1337	101	415	16	.1513	.3095	.3151	.4286
	75	13	46	3				
	392	42	146	7				

TABLE A-2 (Cont'd)

CDF	Attrites and Enrols by Quality Type				Attrition Rates by Quality Type			
	HSG		NHSG		HSG		NHSG	
	1-3U	3L-5	1-3U	3L-5	1-3U	3L-5	1-3U	3L-5
6232	38	3	27	5	.1315	.1579	.3506	.2333
6233	289	19	77	6	.1472	.1429	.1733	.5000
6235	53	2	13	2	.2692	.3385	.4479	.5156
6236	380	14	75	4	.5000	.4667	.3333	.7000
6237	210	132	155	45	.3103	.4848	.6000	.8462
6239	780	390	355	95	.2150	.3506	.4566	.2222
6240	8	14	4	7	.2553	.4412	.3707	.5000
6241	16	30	12	10	.2548	.3684	.3529	.0000
6242	18	16	15	11	.1653	.2727	.3472	.0000
6243	58	33	25	13	.0408	.1667	.0714	.0000
6245	276	27	142	2	.2533	.3214	.4865	.5000
6248	1284	77	311	9	.2105	.3333	.3099	.3333
6249	85	15	43	2	.2830	.4286	.5200	.5000
6254	333	34	116	4	.0823	.9000	.0000	.0000
6255	66	7	12	0	.0205	.0000	.0000	.0000
6256	259	19	51	1	.0857	.5000	.3333	.0000
6257	59	3	25	0				
6258	357	11	72	2				
6259	4	1	1	0				
6260	98	6	14	1				
6261	77	5	36	2				
6262	304	28	74	4				
6263	64	5	22	2				
6264	304	27	71	6				
6265	30	3	13	1				
6266	106	7	25	2				
6267	34	1	0	0				
6268	413	1	2	0				
6269	3	0	0	0				
6270	146	2	1	0				
6271	6	2	3	0				
6272	70	4	5	0				
6273	119	93	70	38	.1143	.2520	.4762	.5758
6274	1041	365	147	66	.1818	.2857	.4286	.5000
6275	8	8	3	1				
6276	44	28	7	2				

TABLE A-2 (Cont'd)

CDF	Attrites and Enrols by Quality Type				Attrition Rates by Quality Type			
	HSG		NHSG		HSG		NHSG	
	1-3U	3L-5	1-3U	3L-5	1-3U	3L-5	1-3U	3L-5
6260	42	91	139	110	.0420	.0588	.1400	.1858
6261	1000	921	993	992	.0058	.0360	.0664	.1122
6262	6	20	20	22	.0189	.0845	.1684	.2057
6269	3017	710	481	282	.0877	.1000	.2424	.0000
6270	228	20	33	2	.0606	.3077	.2857	.9000
6271	33	13	7	1	.0576	.0000	.2500	.0000
6272	191	1	4	0	.0551	.5000	.0000	.0000
6273	236	2	2	0	.1465	.4409	.5522	.6429
6274	512	127	67	14	.0970	.1961	.3372	.5000
6275	65	40	29	16	.2211	.3333	.3000	.9000
6276	670	204	86	32	.0485	.1304	.1404	.0000
6277	21	1	6	1	.0539	.0000	.2093	.0000
6278	95	3	20	1	.3244	.3432	.4468	.5000
6280	22	3	8	0	.0000	.0000	.0000	.0000
6281	454	23	57	2	.0000	.0000	.0000	.0000
6282	16	0	5	0	.0000	.0000	.0000	.0000
6283	297	14	43	3	.0000	.0000	.0000	.0000
6284	169	11	42	4	.0000	.0000	.0000	.0000
6285	521	32	54	8	.0000	.0000	.0000	.0000
6286	0	0	1	0	.0000	.0000	.0000	.0000
6287	64	211	31	38	.0000	.0000	.0000	.0000
6288	0	0	0	0	.0000	.0000	.0000	.0000
6289	51	136	44	37	.0000	.0000	.0000	.0000
6290	0	0	1	0	.0000	.0000	.0000	.0000
6291	35	102	44	24	.0000	.0000	.0000	.0000
6292	1	0	0	0	.0000	.0000	.0000	.0000
6293	141	54	67	31	.0000	.0000	.0000	.0000
6294	0	2	0	1	.0000	.0000	.0000	.0000
6295	106	63	15	5	.0000	.0000	.0000	.0000
6296	1	0	0	0	.0000	.0000	.0000	.0000
6297	36	2	1	1	.0000	.0000	.0000	.0000

TABLE A-2 (Cont'd)

CDP	Attrites and Enrols by Quality Type				Attrition Rates by Quality Type			
	HSG		NHSR		HSG		NHSR	
	1-3U	3L-5	1-3U	3L-5	1-3U	3L-5	1-3U	3L-5
6288	0	0	1	0	.0000	.0000	.1111	.0000
6289	24	39	5	3				
	7	2	1	0	.1458	.1333	.3333	.0000
6290	48	15	3	2				
	1	0	1	0	.0358	.0000	.1250	.0000
6291	17	12	8	4				
	2	1	1	0	.0465	.0303	.1000	.0000
6292	43	33	10	7				
	2	0	0	1	.0323	.0000	.0000	.0833
6297	62	54	10	12				
	17	8	8	1	.0037	.0027	.0048	.0016
6301	4683	2928	1668	634				
	84	59	13	11	.3401	.4041	.5000	.6275
6302	247	146	26	16				
	62	35	24	10	.2594	.3431	.5000	.5556
6303	239	102	48	12				
	13	28	10	1	.0268	.1722	.2083	.2000
6304	485	162	48	15				
	0	2	0	0	.0000	.4000	.0000	.0000
6305	36	5	6	1				
	2	1	2	0	.0833	.5000	.3333	.0000
	24	2	6	0				
6306	19	2	4	1	.1073	.1818	.1290	.3333
6307	177	11	31	1				
	2	4	0	2	.0500	.1818	.0000	.3333
6308	40	22	6	6				
	14	1	1	0	.0551	.0625	.2000	.0000
6309	237	16	15	0				
	10	1	2	0	.0452	.0505	.1000	.0000
6310	221	11	20	1				
	9	0	2	0	.0703	.0000	.1000	.0000
6311	128	9	20	2				
	2	0	4	0	.0158	.0000	.1250	.0000
6312	101	7	32	5				
	3	1	6	1	.0625	.1250	.3333	.5000
	48	24	12	6				

TABLE A-2 (Cont'd)

CDF	Attrites and Enrols by Quality Type				Attrition Rates by Quality Type			
	HSG		NHSG		HSG		NHSG	
	1-3U	3L-5	1-3U	3L-5	1-3U	3L-5	1-3U	3L-5
6313	0	2	2	1	.0000	.1250	.3333	.2000
6314	19	16	6	5				
	2	1	5	1	.1538	.2000	.4545	.3333
6315	13	5	11	1				
	6	3	6	0	.0259	.0484	.2857	.0000
6316	201	62	21	7				
	2	16	5	5	.0154	.1505	.1163	.2500
6317	103	106	43	36				
	0	0	0	0	.0000	.0000	.0000	.0000
6328	27	8	1	2				
	1	2	0	0	.0164	.0513	.0000	.0000
6337	61	39	12	3				
	14	3	3	1	.1077	.3750	.1071	.9000
6339	130	8	28	1				
	20	14	24	13	.0456	.0528	.1311	.2031
6341	439	238	183	64				
	30	32	11	5	.1493	.3636	.2895	.6923
6342	201	88	38	13				
	22	3	20	0	.0667	.1034	.2062	.0000
6350	330	29	97	5				
	11	0	5	1	.1048	.0000	.2941	.3333
6352	105	1	17	3				
	18	1	2	0	.2045	.5000	.1818	.0000
6355	82	2	11	0				
	5	1	2	1	.1786	.5000	.2500	.9000
6356	28	1	6	1				
	34	2	12	1	.2720	.1667	.3333	.9000
6359	125	12	36	1				
	48	2	15	1	.3137	.2857	.4524	.9000
6360	153	7	42	1				
	13	2	2	0	.1605	.3333	.1538	.0000
6361	81	6	13	1				
	5	8	17	7	.1667	.4706	.4474	.7000
6362	30	17	38	10				
	21	7	22	10	.3333	.4118	.5238	.6250
6363	63	17	42	16				
	8	4	5	5	.2563	.2667	.3333	.7500
	27	15	27	12				

TABLE A-2 (Cont'd)

CDP	Attrites and Enrols by Quality Type				Attrition Rates by Quality Type			
	HSG		NHSB		HSG		NHSB	
	1-3U	3L-5	1-3U	3L-5	1-3U	3L-5	1-3U	3L-5
6366	16	3	8	0	.1260	.2500	.3636	.0000
6368	127	12	22	0				
	13	9	19	8	.2203	.3103	.4130	.7273
6369	59	29	46	11				
	12	12	29	17	.2449	.4800	.7073	.7083
	49	25	41	24				
6370	22	18	31	14	.1746	.2935	.4429	.4828
	126	71	70	29				
6371	65	2	23	2	.0734	.0588	.1447	.3333
	886	34	159	6				
6372	24	1	6	0	.3380	.2500	.3750	.0000
	71	4	16	0				
6376	1	1	0	0	.0057	.0667	.0000	.0000
	174	15	19	0				
6377	24	2	3	0	.0710	.0769	.0556	.0000
	338	26	54	0				
6378	3	0	3	1	.6435	.0000	.0811	.1250
	69	28	37	8				
6380	5	1	2	0	.0067	.0019	.0109	.0000
	744	534	184	84				
6381	1	1	0	0	.0024	.0033	.0000	.0000
	413	305	78	38				
6400	12	5	8	7	.0870	.0752	.0952	.3182
	179	66	84	22				
6401	13	0	3	1	.0414	.0000	.0789	.5000
	314	15	38	1				
6404	2	1	2	0	.0541	.2000	.2857	.0000
	37	5	7	0				
6405	5	0	0	0	.0292	.0000	.0000	.0000
	171	2	3	0				
6406	4	0	1	0	.0200	.0800	.1667	.0000
	200	2	6	0				
6407	4	2	5	0	.0183	.1429	.1471	.0000
	218	14	34	2				
6409	53	3	12	1	.3011	.3750	.7500	.5000
	176	8	16	1				

TABLE A-2 (Cont'd)

COP	Attrites and Enrols by Quality Type				Attrition Rates by Quality Type			
	HSG		NHSG		HSG		NHSG	
	1-3U	3L-5	1-3U	3L-5	1-3U	3L-5	1-3U	3L-5
E410	10	1	7	0	.1837	.3333	.2692	.0000
E412	98	3	26	0	.2602	.1429	.3171	.0000
E413	51	1	12	0	.1915	.2000	.1250	.0000
E414	196	7	41	0	.1487	.1250	.3333	.0000
E415	9	1	1	0	.0833	.6667	.0000	.0000
E417	47	5	8	0	.2233	.2258	.3364	.0000
E420	29	2	8	0	.1991	.2424	.2568	.6667
E421	195	16	24	1	.2675	.3333	.0000	.0000
E423	2	2	0	0	.0000	.0000	.0000	.0000
E424	24	3	4	0	.1837	.2500	.3077	.0000
E428	155	7	37	0	.1670	.2692	.2917	.9000
E429	694	31	110	1	.2274	.5000	.5000	.0000
E447	139	8	15	2	.0000	.0000	.0000	.0000
E450	698	33	74	3	.0741	.0000	.1667	.0000
E452	130	1	0	0	.0283	.0067	.0000	.0667
E477	486	3	0	0	.0902	.1029	.1977	.2283
E486	0	0	0	0	.0046	.0020	.0069	.0052
E487	35	2	5	0	.0508	.0380	.0888	.0972
E489	9	1	4	0	.0431	.0843	.1148	.1773
E492	49	4	13	0				
	84	7	14	1				
	503	26	48	1				
	98	1	3	0				
	431	2	6	0				
	0	0	0	0				
	1	1	0	0				
	1	0	0	0				
	2	0	0	0				
	4	0	1	0				
	54	13	6	1				
	3	1	0	4				
	106	149	54	60				
	70	63	155	84				
	776	612	784	362				
	3	1	2	1				
	646	459	251	172				
	13	7	23	14				
	256	184	259	144				
	57	50	45	39				
	1321	553	352	220				

TABLE A-2 (Cont'd)

CDP	Attrices and Enrols by Quality Type				Attrition Rates by Quality Type			
	HSG		NSHG		HSG		NSHG	
	1-3U	3L-5	1-3U	3L-5	1-3U	3L-5	1-3U	3L-5
6493	21	5	2	6	.0058	.0472	.0294	.1463
6501	2134	106	68	43	.0377	.1057	.0804	.2042
6506	531	998	224	142	.0556	.1242	.2034	.2054
6511	10	60	24	23	.0100	.0100	.0100	.0100
6512	180	483	118	112	.0182	.0308	.0196	.0333
6513	2	2	2	2	.0132	.0376	.0488	.0732
6515	200	200	200	200	.0658	.0528	.1034	.2000
6516	1	4	1	1	.0440	.0795	.1373	.0893
6517	55	130	51	30	.0307	.0419	.1087	.0811
6518	1	8	2	3	.0516	.0610	.1069	.1557
6519	76	213	41	41	.0286	.0303	.0779	.1463
6521	41	14	24	9	.0192	.0000	.0217	.0000
6522	623	265	232	45	.0137	.0180	.0947	.0732
6527	4	21	7	5	.0000	.0053	.0400	.0204
6528	91	264	51	56	.0200	.0412	.1711	.0455
6530	5	18	10	9	.0444	.0476	.0769	.0000
6537	163	430	92	111	.1801	.3438	.3252	.2727
6542	13	36	14	15	.0000	.5000	.0000	.0000
6543	252	590	131	122	.0000	.0000	.0000	.0000
	5	2	6	6				
	175	66	77	41				
	6	0	1	0				
	312	8	46	2				
	4	2	9	3				
	291	111	95	41				
	0	1	2	1				
	63	188	50	49				
	4	4	13	1				
	200	97	76	22				
	2	1	1	0				
	45	21	13	3				
	78	11	40	3				
	433	32	123	11				
	0	1	0	0				
	6	2	0	0				
	0	0	0	0				
	7	0	2	6				

TABLE A-2 (Cont'd)

CDP	Attrites and Enrols by Quality Type				Attrition Rates by Quality Type			
	HSG		NHSG		HSG		NHSG	
	1-3U	3L-5	1-3U	3L-5	1-3U	3L-5	1-3U	3L-5
6544	4	0	2	1	.1053	.0000	.2057	.9000
	38	3	7	1				
6545	25	2	6	0	.1506	.2222	.1667	.0000
	166	9	36	3				
6546	4	9	6	8	.1143	.2500	.2609	.8000
	35	36	23	10				
6545	0	2	1	0	.0000	.5000	.9000	.0000
	5	4	1	0				
6551	0	3	0	0	.0000	.7500	.4000	.0000
	1	4	1	0				
6568	0	0	0	0	.0000	.0000	.0000	.0000
	14	29	14	5				
6569	0	0	0	0	.0000	.0000	.0000	.0000
	5	18	3	2				
6570	0	0	0	0	.0000	.0000	.0000	.0000
	0	4	0	0				
6571	0	0	0	0	.0000	.0000	.0000	.0000
	0	4	1	0				
6572	0	0	0	0	.0000	.0000	.0000	.0000
	2	3	0	0				
6573	0	0	1	1	.0000	.0000	.2500	.2000
	12	26	4	5				
6574	0	0	0	0	.0000	.0000	.0000	.0000
	4	3	2	1				
6582	0	0	0	0	.0000	.0000	.0000	.0000
	7	9	14	6				
6562	1	0	1	0	.0023	.0000	.0435	.0000
	121	5	23	2				
6563	3	0	1	0	.0093	.0000	.0179	.0000
	324	20	56	8				
6564	0	0	1	1	.0000	.0000	.0270	.3333
	179	7	37	3				
6565	2	0	1	0	.0809	.0000	.3333	.0000
	22	1	3	0				

TABLE A-3

PIPELINES

<u>Rating</u>	<u>Pipelines Within Rating</u>	<u>Number of Courses in Pipeline</u>	<u>Course CDPs</u>
ABE	A	2	6280 6513
ABF	A	2	6282 6512
ABH	A	2	6281 6527
AC	A	2	6297 6278
AD	A	3	6297 6210 6501
AD	B	3	6297 6210 6568
AD	C	3	6297 6210 6569
AD	D	3	6297 6210 6570
AD	E	3	6297 6210 6571
AD	F	3	6297 6210 6572
AD	G	3	6297 6210 6573
AD	H	3	6297 6210 6574
AD	I	3	6297 6210 6575
AD	J	3	6297 6210 6576
AD	K	3	6297 6210 6577
AD	L	3	6297 6210 6578
AD	M	3	6297 6210 6579
AD	N	3	6297 6210 6581
AD	O	3	6297 6210 6582
AD	P	3	6297 6210 6583
AD	Q	3	6297 6210 603F
AE	A	4	6297 6218 6235 6515
AG	A	1	6472
AK	A	2	6511 6522
AME	A	3	6297 6212 6516
AMH	A	3	6297 6213 6517
AMS	A	3	6297 6214 6518
AO	A	3	6297 6226 6506
AO	A	4	6297 6220 6231 6240
ASE	A	4	6297 6215 6237 6530
ASH	A	3	6297 6216 6182
ASM	A	3	6297 6217 6193
AT	A	4	6297 6219 6230 6239
AW	A	3	6297 6224 6537
AX	A	4	6297 6221 6232 6241
AZ	A	2	6511 6528
BT	A	3	6013 6260 6486
BT	B	3	6013 6260 6499
BU	A	1	8001
CF	A	2	6511 6502
CH	A	1	6401
CTA	A	1	6020
CTI	A	2	6203 6122

TABLE A-3 (Cont'd)

<u>Rating</u>	<u>Pipelines Within Rating</u>	<u>Number of Courses in Pipeline</u>	<u>Course CDPs</u>
CTI	B	2	6203 6123
CTI	C	2	6203 6140
CTI	D	2	6203 6321
CTI	E	2	6203 6322
CTI	F	2	6203 6328
CTI	G	2	6203 6329
CTI	H	2	6203 6330
CTI	I	2	6203 6331
CTI	J	2	6203 6326
CTI	K	2	6203 6323
CTM	A	5	CTM1 605A 605B 605C 6161
CTO	A	1	6053
CTR	A	1	6301
CTT	A	2	6302 6320
CTT	B	2	6302 6319
CTT	C	2	6302 3197
CTT	D	2	6302 4084
CTT	E	2	6302 6458
DK	A	2	6511 6061
DP	A	1	6167
DS	A	2	DS01 6131
DT	A	1	6036
EA	A	1	EA01
EM	A	2	EM01 6070
EN	A	3	6013 6261 6487
EO	A	1	EO01
ETAE	A	2	ET01 ET02
ETSS	A	6	FTS1 604A 604B 604C 604D 5200
EW	A	5	EW01 602A 602B 602C 602D
FTG	A	2	FTG1 6377
FTGS	A	3	FT01 5200 6337
FTM	A	2	FTM1 6027
GMG	A	2	GMG1 6400
GMM	A	2	GMM1 6115
GMTA	A	2	GMT1 6378
GNT	A	1	6025
GSE	A	5	GSE1 601A 8562 8563 8565
GSM	A	5	GSM1 601B 8562 8563 8564
HM	A	1	HM01
HT	A	3	6547 HT01 HT02
IC	A	2	IC01 6073

TABLE A-3 (Cont'd)

<u>Rating</u>	<u>Pipelines Within Rating</u>	<u>Number of Courses in Pipeline</u>	<u>Course CDPs</u>
IM	A	1	6046
IS	A	1	6529
JO	A	1	6063
LI	A	1	6567
ML	A	1	6077
MM	A	3	6016 6262 6492
MM	B	3	6013 6262 6493
MN	A	1	6041
MR	A	1	6068
MS	A	1	6125
MU	A	1	6065
QM	A	1	6047
OS	A	1	6543
OT	A	1	6341
PC	A	1	6370
PH	A	1	6523
PM	A	1	6076
PN	A	2	6511 6102
PR	A	2	6254 6519
QM	A	1	6001
RM	A	2	6144 6380
RM	B	2	6144 6381
RP	A	1	6553
SH	A	1	6477
SK	A	2	6511 6059
SM	A	1	5491
STG	A	3	6015 6195 6276
STG	B	3	6015 6196 6276
STG	C	3	6015 6198 6276
STG	D	3	6015 6118 6276
STG	E	3	6015 5411 6276
STG	F	3	6015 4573 6276
STG	G	3	6015 604W 6276
STG	H	3	6015 604V 6276
STS	A	4	6342 6172 6402 6277
STS	B	4	6342 6172 6401 6277
STS	C	4	6342 6172 6460 6277
STS	D	4	6342 6172 600A 6277
SW	A	1	5491
TD	A	4	6297 6222 6233 6242
TM	A	2	6036 601C

TABLE A-3 (Cont'd)

<u>Rating</u>	<u>Pipelines Within Rating</u>	<u>Number of Courses in Pipeline</u>	<u>Course CDPs</u>
TM	B	3	6546 6034 6010
TM	C	2	TM01 6093
UT	A	1	UT01
YN	A	2	6511 6057

TABLE A-4

PARALLEL CDPs

<u>CDP</u>	<u>Number of Parallel Courses</u>	<u>CDPs</u>
AV01	3	6243 604J 604X
BU01	2	6286 6081
CE01	3	6259 6270 6307
CE02	2	6079 6285
CM01	2	6149 6291
CTM1	3	6257 6360 6308
DS01	3	6366 6269 6309
EA01	2	6078 6287
EM01	2	6258 6273
EO01	2	6097 6292
ET01	4	6414 6409 6417 6412
ET02	2	6420 6428
ETN1	4	6256 6271 6255 6272
ETN2	2	6429 6421
ET11	4	6415 6408 6416 6411
ET13	2	6424 6423
ET14	3	6430 6431 6436
ET15	3	6432 6432 6425
ET16	2	6434 6437
ET17	3	6427 6435 6426
ETS1	2	6450 6447
EW01	3	6254 6275 6306
FTG1	2	6248 6359
FT01	3	6413 6410 6404
FTM1	2	6249 6352
GMG1	2	6370 6362
GMM1	2	6368 6363
GNT1	3	6359 6361 6314
GSE1	2	6372 6355
GSM1	3	6543 6544 6545
HM01	2	6084 6085
HT01	2	6119 6120
HT02	2	6106 6339
IC01	1	6274
SM01	2	6005 6006
SW01	2	6282 6022
TM01	3	6551 6549 6318
UT01	2	6290 6083

TABLE A-5-1

PROGRAMS TO CALCULATE COST PER GRADUATE PER PIPELINE BY QUALITY TYPE

The program QUALITY/WEIGHTS calculates a weight based on differential attrition within each CDP. This weight is necessary so that the cost per graduate of each CDP will be different by quality type due to different attrition during each individual course. The weighted average of the weights is not unity because of differences in the attrition data between the data used in the TAEG model, and that extracted from the SMF file.

TABLE A-5-1

CALCULATE QUALITY WEIGHTS

```

FILE 11(KIND=DISK,TITLE='TAE6/EXAMPLE',FILETYPE=8)
FILE 12(KIND=DISK,TITLE='SMF79/EXAMPLE',FILETYPE=8)
FILE 6(KIND=RENTG,MAXRECSIZE=128)
FILE 14(KIND=DISK,TITLE='NACCS/QUALITY/WEIGHTS/EXAMPLE/44')
$RESET FREE
DIMENSION MMNIT(20),ENROLS(10),ATTRS(10)
REAL NITCOP,NETCOP
DATA NITCOP/
ICOP=0
EQUAL=4

C      START OF THE LOOP TO CALCULATE ONE CNET(AGGREGATE) WEIGHT
C      AND EQUAL NITRAS (DISAGGREGATE) WEIGHTS
C      LOOP ENDS WITH "GO TO 10", WHICH OCCURS IN ONLY ONE OTHER
C      LOCATION.  ESCAPE IS "END=98" IN READ(21,100...
C      THE CODE SHOULD WORK IF THE TWO FILES DON'T MATCH COP
C      FOR NCP, BUT THE DATA USED DID MATCH, SO IT WASN'T TESTED
10    CONTINUE
C      READ AGGREGATE DATA
      READ(21,100,END=98)NETCOP,ENROL,ALENG,ATTS,ATTR,SETR,SETP
100    FORMAT(4,3F6.8,3F6.2)
C      CREATES WORK UNITS FROM AGGREGATE DATA
      NUTAE6=D1.0+0.5*ATTR/(1.0-ATTR) + SETR*SETP
30    CONTINUE
      IF (NITCOP-57.NETCOP) GO TO 10
      IF (NITCOP-15.NETCOP) GO TO 35
C      READ DISAGGREGATE DATA
      READ(12,200)NITCOP,TENROL,TATTS,(ENROLS(I),I=1,8),
X      (ATTRS(I),I=1,8)
200    FORMAT(4,2F6.0,24X,16F4.0)
      IF (NITCOP-17.NETCOP) GO TO 30
35    CONTINUE
C      LIMITS ATTRITION RATES TO AVOID ZERO DIVIDES
      TATTR=0.0
      IF (TENROL-NE.0.0) TATTR=TATTS/TENROL
      IF (TATTR-EG.1.0) TATTR=0.9
C      CREATES FOUR QUALITY TYPES(1-3U HSG,3L-5 HSG-SAME FOR NMSG)
C      ORIGINALLY 8 TYPES(1-2,3U-3L,4-5) BY HSG AND NMSG
      IC1=-1
      DO 20 I=1,EQUAL
        IC1=IC1+2
        IC2=IC1+1
        ATTRS(I)=ATTRS(IC1)+ATTRS(IC2)
        ENROLS(I)=ENROLS(IC1)+ENROLS(IC2)
        IF (.NOT.(NETCOP.IS.NITCOP)) GO TO 90
        ATTR=0.0
        IF (ENROLS(I)-NE.0.0) ATTR=ATTRS(I)/ENROLS(I)
        IF (ATTR-67.0.9) ATTR=0.9

```

```

C      CREATES WORK UNIT FOR DISAGGREGATE DATA
      MUNIT(I)=(1.0 + 0.5*ATTR/(1.0-ATTR) +
X      SETH=SETP)
C      CREATES QUALITY WEIGHT FOR PIPELINE CALCULATION
      MUNIT(I)=MUNIT(I)/MUTAE6
20     CONTINUE
      WRITE(6,300)NETCDP,NITCDP,(MUNIT(I),I=1,ISUAL)
      WRITE(14,300)NETCDP,NITCDP,(MUNIT(I),I=1,ISUAL)
300    FORMAT(2X,A6,1X,A6,10F7.4)
C      END OF MAJOR LOOP
      GO TO 14
C      PRINTS FOR NORMAL AND ABNORMAL TERMINATION
90     CONTINUE
      WRITE(6,400)NETCDP,NITCDP

```

```

400    FORMAT('0CDPS DON'T MATCH: CNET,'A6,' NITRAS,'A6)
      GO TO 30
97     CONTINUE
      WRITE(6,500)NETCDP,NITCDP
500    FORMAT('0ENDED ON WRONG REAS. NETCDP ',A6,' NITCDP ',A6)
      GO TO 99
98     CONTINUE
      WRITE(6,600)NETCDP,NITCDP
600    FORMAT('0ENDED ON RIGHT REAS. NETCDP ',A6,' NITCDP ',A6)
99     CONTINUE
      CLOSE(14,DISP=CRUNCH)
      WRITE(6,700)
700    FORMAT('0----- LAST EXECUTABLE STATEMENT -----')
      END

```

TABLE A-5-2

CALCULATE PIPELINE COSTS

The Program PIPELINES/COSTS calculates the cost per graduate of getting one person out of the last CDP including the cost of those who attrite along the way. It turns out that this calculation must be done from last course to first in order to know how many must enter the front end of the pipeline to produce one graduate.

```

FILE 11(KIND=DISK,TITLE='SMF79/EXAMPLE',FILETYPE=8)
FILE 12(KIND=DISK,TITLE='NACCS/QUALITY/WEIGHTS/EXAMPLE/44',FILETYPE=8)
FILE 13(KIND=DISK,TITLE='PIPELINES/EXAMPLE',FILETYPE=8)
FILE 14(KIND=DISK,TITLE='TAEG/EXAMPLE',FILETYPE=8)
FILE 16(KIND=DISK,TITLE='NACCS/EISAG/COSTS/EXAMPLE/44')
FILE 6(KIND=REMOTE,MAXRECSIZE=22)
$RESET FREE
      DIMENSION INOPS(10),ANITAT(300,8),ANITWT(300,8),
X          NICDPO(300),NICDPN(300),NETCDP(300),
X          PCCOST(300),WATT(10,8),WNTS(10,8),
X          ACCATE(10,8),ANOLD(10),PPECST(10),
X          ALENG(300),MLENG(10),CPERD(10)
      REAL ICPS,NICDPO,NICDPN,NETCDP
      NMANY=999
      IQUAL=4
C      READS DATA INTO HOLDING MATRIX
      DO 10 I=1,NMANY
C          DISAGGREGATE ATTRITION DATA
          READ(11,100,END=5) NICDPO(I),TENROL,TATTS,(ANITAT(I,J),J=1,
X          8),(ANOLD(J),J=1,8)
          TATTR=WATTS/TENROL
          TATTR8=TATTR*3.0
          TATTR5=TATTR/3.0
C          CREATES FOUR QUALITY TYPES FROM EIGHT
          IC1=-1
          DO 15 J=1,IQUAL
              IC1=IC1+2
              IC2=IC1+8
              ANOLD(J)=ANOLD(IC1)+ANOLD(IC2)
              ANITAT(I,J)=ANITAT(I,IC1)+ANITAT(I,IC2)
C          LIMITS ATTRITION RATES TO AVOID ZERO DIVIDES
              ANOLD1=0.0
              IF (ANITAT(I,J).NE.0.0) ANOLD1=ANOLD(J)/ANITAT(I,J)
C          LIMITS ATTRITION RATES TO SMOOTH (NOT USED)
              IF (ANOLD1.GT.TATTR8) ANOLD1=TATTR8
C              IF (ANOLD1.LT.TATTR5) ANOLD1=TATTR5

```

```

      IF E-ANOLD1.GT.0.9) ANOLD1=0.9
      ANITAT(I,J)=ANOLD1
15      CONTINUE
100     FORMAT(14,2F6.0,24X,16F4.0)
150     FORMAT(1X,A6,2F6.0,8F10.4)
C       READS QUALITY WEIGHTS
      READ(12,200,END=5) NICOPW(I),(ANITWT(I,J),J=1,100AL)
200     FORMAT(10X,C4,8F7.4)
C       READS COURSE COST, AND COURSE LENGTH
      READ(14,300,END=5) NETCOP(I),ALENG(I),PCCOST(I)
300     FORMAT(4,6X,F6.0,24X,F6.0)
5       CONTINUE
10      CONTINUE
C=      START OF INFINITE LOOP, ENDS AT "GO TO 20", WHICH
C=      OCCURS IN ONE OTHER LOCATION.  ESCAPE IS THROUGH "END=99"
C=      IN "READ(15,400...)"
20      CONTINUE
C       READS IN PIPELINE TO BE COSTED
      READ(15,400,END=99) RATING,PIPE,ICNUM,(ICOPS(I),I=1,ICNUM)
      WRITE(6,420) RATING,PIPE,ICNUM,(ICOPS(I),I=1,ICNUM)
400     FORMAT(14,A2,12,10(2X,C4))
420     FORMAT(10,A6,13,15(1X,10A6)
C       EXTRACTS COST AND ATTRITION DATA FOR EACH COURSE IN
C       PIPELINE
      IDUT=0
      DO 25 I=1,ICNUM
      DO 30 J=1,100
      ICN=0
C=      ALL INPUT FILES WERE CONFORMABLE, THAT IS,
C=      THE FIRST, SECOND, ETC. COP IN EACH MATCH
C=      WITH ONE ANOTHER.
      IF (.NOT.(ICOPS(IJ)=IS-NICOP(I))) GO TO 30
      ICN=1
      ALENG(IJ)=ALENG(I)
      DO 40 J=1,100AL
      MAT(IJ,J)=ANITAT(I,J)
      WNTS(IJ,J)=ANITWT(I,J)*PCCOST(I)
      CONTINUE
      WRITE(6,666) ICOPS(IJ),(MAT(IJ,J),J=1,100AL),
      (WNTS(IJ,J),J=1,100AL)
      FORMAT(1X,A6,4F7.4,4F7.0)
      IDUT=IDUT+1
      IF (IDUT.EQ.ICNUM) GO TO 60
      IF (ICN.EQ.1) GO TO 25
      CONTINUE
30      CONTINUE
25      CONTINUE
      WRITE(6,500) RATING,PIPE
500     FORMAT(10,A6,13,15(1X,A6,A2)
      GO TO 20
60      CONTINUE
C       PERFORMS CALCULATION FOR LAST COP IN PIPELINE
      DO 75 J=1,100AL
      PPEOST(J)=WNTS(ICNUM,J)
      ALCAFE(ICNUM,J)=1.0
75      CONTINUE

```

```

C           IF PIPELINE HAS ONLY ONE COP, GO TO END CALCULATIONS
C           AND PRINT
C           IF (ICRUN-EG-1) GO TO 80
C           WORKING FROM NEXT-TO-LAST COP TO FIRST, CALCULATE
C           THE NUMBER OF GRADUATES IN A GIVEN COP NECESSARY TO
C           SET ONE GRADUATE FROM THE LAST COP.

```

```

NICHUN=ICRUN-1
DO 85 I=1,NICHUN
  I=NICHUN+I-1
  IP1=I+1
  DO 80 J=I, IQUAL
    ALCTE(I,J)=ALCTE(IP1,J)/(1.0-WATT(IP1,J))
    PPECST(J)=PPECST(J) + WTS(I,J)*ALCTE(I,J)
    CONTINUE
90      CONTINUE
85      CONTINUE
C      CALCULATES TOTAL PIPELINE LENGTH, ASSUMING NO WAITING
SLENG=0.0
DO 81 I=1,ICRUN
  SLENG=SLENG+HLENG(I)
81      CONTINUE
C      CALCULATES COST PER DAY
DO 82 I=1,IQUAL
  CPERD(I)=0.0
  IF (SLENG.NE.0.0) CPERD(I)=PPECST(I)/SLENG
82      CONTINUE
WRITE(16,606)RATING,PIPE,(PPECST(I),I=1,IQUAL),SLENG
WRITE(6,600)RATING,PIPE,(PCERD(I),I=1,IQUAL),SLENG
600      FORMAT(1,2A6,8F10.2,F10.1)
606      FORMAT(1,2A6,4F10.2,F10.1)
C      END OF MAJOR LOOP
GO TO 20
99      CONTINUE
CLOSE(16,DISP=CRUNCH)

```

```

700      WRITE(6,700)
      FORMAT('0==== LAST EXECUTABLE STATEMENT =====')
      STOP
      END

```

TABLE A-6
RESULTS OF CALCULATIONS

TABLE A-6-1

QUALITY WEIGHTS

CDF	Quality Weights by Quality Type			
	1-3U HSG	3L-5 HSG	1-3U NHSG	3L-5 NHSG
BU01 BU01	0.9841	1.0000	0.9959	1.0102
CE01 CE01	0.9837	1.0389	1.0256	1.3327
CE02 CE02	1.0175	0.9906	1.0658	0.9692
CM01 CM01	0.9867	0.9889	1.0670	1.0058
CTM1 CTM1	0.9737	1.0413	1.0583	1.9305
DS01 DS01	0.9827	1.0182	1.0905	0.9418
EA01 EA01	0.9865	0.9585	0.9585	1.9535
EM01 EM01	0.9782	1.1091	1.3696	1.5632
EO01 EO01	0.9999	0.9888	1.0030	1.0044
ETN1 ETN1	0.9431	1.1413	0.9701	0.9130
ETN2 ETN2	1.0619	1.2097	1.3565	0.9151
ETS1 ETS1	1.1702	0.9362	0.9362	0.9352
ET01 ET01	1.0482	1.0342	1.1771	1.1413
ET02 ET02	1.0165	1.0663	1.0794	2.2374
ET11 ET11	0.9674	1.1368	1.1234	5.1489
ET13 ET13	0.9690	1.0042	1.0419	0.9161
EW01 EW01	1.0298	1.1797	1.1254	1.3871
FTG1 FTG1	1.0849	1.1223	1.3247	1.5978
FTM1 FTM1	1.0482	1.0924	1.1257	1.2554
FTJ1 FTJ1	1.0187	1.0701	1.0806	0.9305
GAG1 GAG1	1.0475	1.0942	1.3231	1.4348
GMM1 GMM1	1.0674	1.1116	1.2048	2.2207
GMY1 GMY1	1.0382	1.3291	1.5494	2.0087
GSE1 GSE1	1.1022	1.2174	1.1413	5.0217
GSM1 GSM1	1.0046	1.0235	1.0311	1.0856
HT01 HT01	0.9952	0.9924	1.0036	1.0315
HT02 HT02	1.0015	1.0012	1.0354	1.0664
IC01 IC01	0.9495	1.0110	1.1303	1.3516
SM01 SM01	0.9814	1.0228	1.0344	1.0367
SW01 SW01	0.9972	1.0310	1.0125	1.0348
TM01 TM01	0.9449	1.0419	1.0082	1.0922
UTJ1 UTJ1	0.9965	0.9871	1.0230	1.0491
1300 1300	1.0052	0.9950	0.9950	0.9950
130E 130E	1.0940	0.8869	1.0909	0.8839
3127 3197	0.9666	1.0475	1.2667	5.1811
3522 3522	0.9849	0.9849	0.9849	1.4725
5200 5200	0.9735	1.0504	1.1129	1.2707
6001 6001	0.9860	1.0351	1.0387	1.0950
6005 6005	0.9915	1.0077	1.0307	1.0605
6006 6006	0.9423	1.0438	1.0444	0.9698
6010 6010	0.9529	0.9757	0.9529	0.9529
6010 6010	0.9529	0.9529	0.9962	0.9529

TABLE A-6-1 (Cont'd)

CDP	Quality Weights by Quality Type			
	1-3U HSG	3L-5 HSG	1-3U NHSG	3L-5 NHSG
6016 6016	1.0005	1.0004	1.0037	1.0012
602A 602A	0.9914	1.0851	0.9848	1.2138
602B 602B	1.0086	1.0225	1.0125	0.9750
602C 602C	0.9786	0.9746	0.9746	0.9746
602D 602D	0.9862	0.9751	0.9751	0.9751
6020 6020	0.9565	1.0294	1.2007	1.5223
6027 6027	0.9918	1.1088	1.0421	1.0236
603A 603A	1.0068	0.9900	0.9900	5.3794
603B 603B	0.9900	0.9900	0.9900	0.9900
603F 603F	0.9899	0.9899	0.9899	0.9899
6034 6034	1.0010	0.9622	0.9933	1.0124
6036 6036	1.0052	1.0367	1.0781	1.1153
604A 604A	0.9986	0.9901	0.9901	0.9901
604B 604B	0.9996	0.9900	0.9900	0.9900
604C 604C	0.9899	0.9899	0.9899	0.9899
604D 604D	0.9900	0.9900	0.9900	0.9900
6041 6041	0.9200	0.9848	1.0383	1.1466
6046 6046	0.9848	1.0155	1.0832	1.0463
6047 6047	0.9691	1.0175	0.9691	1.2918
605A 605A	1.0210	1.0099	0.9801	0.9801
605B 605B	0.9949	0.9798	0.9798	0.9798
605C 605C	0.9946	0.9799	0.9799	0.9799
6053 6053	0.9971	0.9859	1.2828	0.9914
6057 6057	0.9406	1.0005	1.0010	1.1351
6059 6059	0.9832	0.9761	1.0212	0.9946
6061 6061	0.9750	0.9868	1.1455	1.0978
6065 6065	0.9970	0.9311	0.9311	0.9311
6068 6068	0.9521	1.0392	1.2257	1.2235
6070 6070	0.9994	1.0381	1.0279	1.0222
6073 6073	0.9983	1.0146	1.0608	0.9851
6076 6076	1.0284	0.8578	1.7112	4.6984
6077 6077	1.0224	0.9133	1.5314	1.7495
6078 6078	0.9575	0.9014	0.9014	0.9014
6079 6079	1.0098	0.9648	1.0603	0.9848
6081 6081	0.9934	1.0025	1.0294	0.9848
6082 6082	1.0063	1.0148	0.9950	1.0570
6083 6083	0.9939	0.9894	1.0118	1.0823
6093 6093	0.9530	0.9809	0.9925	1.0481
6097 6097	0.9936	0.9865	1.0024	0.9797
6102 6102	0.9861	1.0144	1.0116	1.0746

TABLE A-6-1 (Cont'd)

CDP		Quality Weights by Quality Type			
		1-3U HSG	3L-5 HSG	1-3U NHSG	3L-5 NHSG
6106 6106		0.9948	0.9879	1.0143	1.0344
6108 6108		0.9970	0.9899	0.9899	0.9899
6115 6115		0.9740	0.9824	1.0352	1.1431
6119 6119		0.9974	0.9935	1.0042	1.0365
6120 6120		0.9950	0.9950	1.0063	1.0175
6125 6125		0.9956	0.9908	1.0111	1.0179
6131 6131		1.0069	1.0290	1.0160	0.9540
6144 6144		0.9720	0.9814	1.0987	1.1625
6146 6146		0.9971	1.1215	1.0700	0.8709
6149 6149		0.9807	0.9885	1.0959	1.0352
6161 6161		1.0106	0.9756	0.9756	0.9756
6167 6167		0.9856	1.0062	1.0397	1.0181
6182 6182		1.0029	0.9799	1.0307	1.0488
6183 6183		0.9877	0.9792	1.0022	1.0275
6210 6210		0.9990	0.9925	1.0074	1.0244
6212 6212		0.9907	1.0060	1.0314	1.0338
6213 6213		0.9949	0.9984	1.0136	1.0221
6214 6214		0.9936	1.0052	1.0293	1.0104
6215 6215		0.9929	1.0037	1.0030	0.9849
6216 6216		0.9849	1.0093	0.9849	1.0927
6217 6217		0.9988	0.9953	1.0145	1.0256
6218 6218		0.9917	0.9927	1.0050	0.9914
6220 6220		0.9935	0.9849	1.0122	1.0664
6221 6221		0.9867	1.0061	1.0050	0.9849
6222 6222		0.9879	0.9849	1.0204	0.9849
6224 6224		1.0169	1.0216	1.0280	0.9849
6226 6226		0.9876	0.9933	1.0388	1.0554
6230 6230		0.9334	0.9709	1.0907	1.2084
6231 6231		0.9730	1.0651	1.0702	1.1963
6232 6232		0.9359	0.9516	1.1050	3.0452
6233 6233		0.9452	0.9426	0.9613	1.3051
6235 6235		1.0303	1.0926	1.2230	1.3335
6236 6236		1.3051	1.2507	1.0876	1.8851
6237 6237		1.0658	1.2795	1.5226	3.2627
6239 6239		0.9819	1.0968	1.2265	0.9870
6240 6240		1.0116	1.2045	1.1180	1.2955
6241 6241		1.0113	1.1155	1.0992	0.8636
6242 6242		0.9491	1.0256	1.0933	0.8636
6245 6245		0.9732	1.0529	0.9953	0.9593
6248 6248		1.0748	1.1366	1.3542	1.3784
6249 6249		1.0414	1.1486	1.1252	1.1486
6254 6254		1.1003	1.2635	1.4167	1.3784

TABLE A-6-1 (Cont'd)

COP	Quality Weights by Quality Type			
	1-3U HSG	3L-5 HSG	1-3U NHSG	3L-5 NHSG
6255 6255	0.9601	5.0541	0.9189	0.9189
6256 6256	0.9286	0.9189	0.9189	0.9189
6257 6257	0.9620	1.3784	1.1486	0.9189
6258 6258	0.9782	1.0737	1.3366	1.5425
6259 6259	1.0210	1.1027	1.2535	1.3784
6260 6260	0.9795	1.0108	1.0360	1.0670
6261 6261	0.9898	1.0031	1.0196	1.0466
6262 6262	0.9891	1.0246	1.0780	1.1054
6269 6269	0.9444	0.9512	1.0453	0.9011
6270 6270	0.9302	1.1013	1.0813	4.9560
6271 6271	0.9286	0.9011	1.0513	0.9011
6272 6272	0.9274	1.3516	0.9011	0.9011
6273 6273	0.9784	1.2565	1.4568	1.7121
6274 6274	0.9495	1.0110	1.1303	1.3516
6275 6275	1.0290	1.1264	1.0942	4.9560
6276 6276	0.9240	0.9687	0.9747	0.9011
6277 6277	0.9268	0.9011	1.0204	0.9011
6278 6278	0.9863	1.0034	1.1140	1.1990
6280 6280	1.0000	1.0000	1.0167	1.0000
6281 6281	1.0000	1.0000	1.0000	1.0000
6282 6282	1.0000	1.0000	1.0116	1.0000
6284 6284	1.0035	1.0000	1.0000	1.0000
6286 6286	0.9797	0.9957	0.9797	1.0406
6287 6287	1.0142	1.0000	1.0000	1.0000
6288 6288	0.9848	0.9848	1.0462	0.9848
6289 6289	1.0221	1.0142	1.1767	0.9420
6290 6290	1.0048	0.9745	1.0438	0.9745
6291 6291	1.0035	0.9949	1.0339	0.9797
6292 6292	1.0064	0.9900	0.9900	1.0347
6297 6297	1.0019	1.0013	1.0024	1.0008
6301 6301	1.0426	1.1075	1.2358	1.7142
6302 6302	1.0146	1.0873	1.2392	1.3949
6303 6303	0.9770	1.0644	1.0905	1.0842
6304 6304	0.9637	1.2850	0.9637	0.9637
6305 6305	1.0075	1.4456	1.2047	0.9637
6306 6306	1.0217	1.0703	1.0551	1.2047
6307 6307	0.9891	1.0703	0.9637	1.2047
6308 6308	0.9940	0.9959	1.0342	0.9637
6309 6309	0.9866	1.0119	1.0173	0.9637
6310 6310	1.0002	0.9637	1.0173	0.9637

TABLE A-6-1 (Cont'd)

CDE	Quality Weights by Quality Type			
	1-3U HSG	3L-5 HSG	1-3U NHSG	3L-5 NHSG
6311 6311	0.9735	0.9637	1.0326	0.9637
6312 6312	0.9959	1.0326	1.2047	1.4456
6313 6313	0.9637	1.0326	1.2047	1.0842
6314 6314	1.0513	1.0242	1.3653	1.2047
6315 6315	0.9786	0.9882	1.1565	0.9637
6318 6318	0.9733	1.0494	1.0271	1.1244
6319 6319	0.9694	0.9694	0.9694	0.9694
6320 6320	0.9879	1.0060	0.9799	0.9799
6337 6337	0.9927	1.2170	0.9923	5.1489
6339 6339	1.0030	1.0102	1.0535	1.1043
6341 6341	0.9477	1.1156	1.0461	1.8273
6342 6342	0.9400	0.9598	1.0247	0.9079
6350 6350	0.9538	0.9011	1.0828	1.1264
6352 6352	1.0170	1.3516	1.0012	0.9011
6355 6355	0.9990	4.9560	1.0513	4.9560
6358 6358	1.0694	0.9912	1.1264	4.9560
6359 6359	1.1071	1.0813	1.2733	4.9560
6360 6360	0.9872	1.1264	0.9830	0.9011
6361 6361	0.9912	1.3016	1.2658	1.9524
6362 6362	1.1264	1.2165	1.3967	1.6520
6363 6363	1.0908	1.0649	1.1264	2.2527
6366 6366	0.9851	1.0721	1.1815	0.9189
6368 6368	1.0438	1.1257	1.2422	2.1441
6369 6369	1.0679	1.3430	2.0293	2.0347
6370 6370	1.0161	1.0750	1.2841	1.3477
6371 6371	0.9435	0.9360	0.9840	1.1327
6372 6372	1.1535	1.0721	1.1946	0.9189
6376 6376	0.9928	1.0252	0.9899	0.9899
6377 6377	1.0006	1.0033	0.9922	0.9642
6378 6378	0.9858	0.9641	1.0062	1.0323
6380 6380	1.0034	1.0009	1.0055	1.0000
6381 6381	1.0012	1.0016	1.0000	1.0000
6400 6400	0.9984	1.0032	1.0143	1.1868
6403 6403	0.9845	0.9637	1.0050	5.3005
6404 6404	0.9913	1.0842	1.1565	0.9637
6405 6405	0.9782	0.9637	0.9637	0.9637
6406 6406	0.9736	0.9637	1.0601	0.9637
6407 6407	0.9727	1.0440	1.0468	0.9637
6409 6409	1.0952	1.1714	2.2527	4.9560
6410 6410	1.0025	1.1264	1.0671	0.9011

TABLE A-6-1 (Cont'd)

CDP	Quality Weights by Quality Type			
	1-3U HSG	3L-5 HSG	1-3U NHSG	3L-5 NHSG
BU01 BU01	0.9841	1.0000	0.9959	1.0102
CE01 CE01	0.9837	1.0889	1.0856	1.3027
CE02 CE02	1.0175	0.9906	1.0658	0.9692
CM01 CM01	0.8267	0.5889	1.0670	1.0060
CTN1 CTN1	0.9737	1.0413	1.0588	0.9305
DS01 DS01	0.9827	1.0182	1.0905	0.9410
EAO1 EAO1	0.9866	0.9585	0.9585	0.9585
EM01 EM01	0.9782	1.1091	1.3696	1.5632
EQ01 EQ01	0.9999	0.5880	1.0030	1.0044
ETN1 ETN1	0.9431	1.1413	0.9701	0.9130
ETN2 ETN2	1.0619	1.2097	1.3565	0.9161
ETS1 ETS1	1.1702	0.9362	0.9362	0.9362
ET01 ET01	1.0482	1.0342	1.1771	1.1413
ET02 ET02	1.0165	1.0663	1.0794	2.2374
ET11 ET11	0.9674	1.1368	1.1234	5.1489
ET13 ET13	0.9650	1.0042	1.0419	0.9161
EW01 EW01	1.0298	1.1097	1.1254	1.3871
FTG1 FTG1	1.0849	1.1223	1.3247	1.5978
FTN1 FTN1	1.0482	1.0924	1.1257	1.2554
FT01 FT01	1.0187	1.0701	1.0806	0.9305
GMG1 GMG1	1.0475	1.0942	1.3231	1.4348
GMM1 GMM1	1.0674	1.1116	1.2048	2.2207
GNT1 GNT1	1.0382	1.3281	1.5494	2.0087
GSE1 GSE1	1.1022	1.2174	1.1413	5.0217
GSM1 GSM1	1.0046	1.0235	1.0311	1.0856
HT01 HT01	0.9952	0.9924	1.0036	1.0315
HT02 HT02	1.0015	1.0012	1.0354	1.0664
IC01 IC01	0.9495	1.0110	1.1303	1.3516
SP01 SM01	0.9814	1.0228	1.0344	1.0367
SH01 SH01	0.9572	1.0010	1.0105	1.0348
TH01 TH01	0.9449	1.0419	1.0082	1.0922
LT01 LT01	0.9965	0.9871	1.0230	1.0491
130C 130C	1.0052	0.9950	0.9950	0.9950
130E 130E	1.0940	0.8889	1.0909	0.8889
3197 3197	0.9666	1.0475	1.2667	5.1811
3522 3522	0.9849	0.9849	0.9849	1.4725
5200 5200	0.9736	1.0504	1.1129	1.2707
6001 6001	0.9860	1.0351	1.0387	1.0960
6005 6005	0.9916	1.0077	1.0307	1.0605

TABLE A-6-1 (Cont'd)

CDF	Quality Weights by Quality Type			
	1-3U HSG	3L-5 HSG	1-3U NHSG	3L-5 NHSG
6006 6006	0.9423	1.0438	1.0444	0.9698
601C 601C	0.9529	0.9767	0.9529	0.9529
601C 6010	0.9529	0.9529	0.9962	0.9529
6016 6016	1.0005	1.0004	1.0037	1.0012
602A 602A	0.9914	1.0851	0.9848	1.2138
6028 6028	1.0036	1.0225	1.0125	0.9750
602C 602C	0.9786	0.9746	0.9746	0.9746
602C 602C	0.9862	0.9751	0.9751	0.9751
6028 6020	0.9565	1.0294	1.2007	1.5223
6027 6027	0.9918	1.1088	1.0421	1.0236
603A 603A	1.0068	0.9900	0.9900	5.3754
6038 6038	0.9900	0.9900	0.9900	0.9900
603F 603F	0.9899	0.9899	0.9899	0.9899
6034 6034	1.0010	0.9622	0.9933	1.0124
6036 6036	1.0058	1.0387	1.0781	1.1153
604A 604A	0.9986	0.9901	0.9901	0.9901
6048 6048	0.9996	0.9900	0.9900	0.9900
604C 604C	0.9899	0.9899	0.9899	0.9899
6048 6040	0.9900	0.9900	0.9900	0.9900
6041 6041	0.9200	0.9848	1.0383	1.1466
6046 6046	0.9848	1.0155	1.0832	1.0463
6047 6047	0.9691	1.0175	0.9691	1.2918
605A 605A	1.0210	1.0099	0.9801	0.9801
6058 6058	0.9949	0.9798	0.9798	0.9798
605C 605C	0.9946	0.9799	0.9799	0.9799
6053 6053	0.9971	0.9859	1.2888	0.9914
6057 6057	0.9406	1.0005	1.0010	1.1351
6059 6059	0.9832	0.9761	1.0218	0.9946
6061 6061	0.9750	0.9868	1.1655	1.0978
6065 6065	0.9970	0.9311	0.9311	0.9311
6068 6068	0.9521	1.0392	1.2257	1.2235
6070 6070	0.9994	1.0381	1.0279	1.0222
6073 6073	0.9983	1.0146	1.0608	0.9851
6076 6076	1.0284	0.8578	1.7112	4.6984
6077 6077	1.0224	0.9133	1.5314	1.7495
6078 6078	0.9575	0.9014	0.9014	0.9014
6079 6079	1.0098	0.9848	1.0603	0.9848

TABLE A-6-1 (Cont'd)

CDP	Quality Weights by Quality Type			
	1-3U HSG	3L-5 HSG	1-3U NHSG	3L-5 NHSG
6081 6081	0.9934	1.0085	1.0294	0.9848
6082 6082	1.0063	1.0148	0.9950	1.0570
6083 6083	0.9939	0.9894	1.0118	1.0823
6093 6093	0.9930	0.9809	0.9926	1.0481
6097 6097	0.9936	0.9865	1.0084	0.9797
6102 6102	0.9861	1.0144	1.0116	1.0746
6106 6106	0.9942	0.9879	1.0143	1.0344
6108 6108	0.9970	0.9899	0.9899	0.9899
6115 6115	0.9740	0.9824	1.0352	1.1431
6119 6119	0.9974	0.9935	1.0042	1.0365
6120 6120	0.9950	0.9950	1.0063	1.0175
6125 6125	0.9958	0.9908	1.0111	1.0179
6131 6131	1.0069	1.0250	1.0160	0.9540
6144 6144	0.9720	0.9814	1.0587	1.1625
6146 6146	0.9971	1.1215	1.0700	0.8709
6149 6149	0.9807	0.9885	1.0959	1.0352
6161 6161	1.0106	0.9756	0.9756	0.9756
6167 6167	0.9856	1.0062	1.0397	1.0181
6182 6182	1.0029	0.9799	1.0307	1.0488
6183 6183	0.9877	0.9792	1.0022	1.0275
6210 6210	0.9990	0.9925	1.0074	1.0244
6212 6212	0.9907	1.0060	1.0314	1.0338
6213 6213	0.9949	0.9984	1.0136	1.0221
6214 6214	0.9936	1.0052	1.0293	1.0104
6215 6215	0.9929	1.0037	1.0030	0.9849
6216 6216	0.9849	1.0053	0.9849	1.0827
6217 6217	0.9988	0.9953	1.0145	1.0256
6218 6218	0.9917	0.9927	1.0050	0.9914
6220 6220	0.9935	0.9849	1.0122	1.0664
6221 6221	0.9867	1.0061	1.0050	0.9849
6222 6222	0.9879	0.9849	1.0204	0.9849
6224 6224	1.0169	1.0216	1.0280	0.9849
6226 6226	0.9876	0.9933	1.0388	1.0554
6230 6230	0.9334	0.9709	1.0507	1.2024
6231 6231	0.9730	1.0651	1.0702	1.1963
6232 6232	0.9359	0.9516	1.1050	3.0452
6233 6233	0.9452	0.9426	0.9613	1.3051
6235 6235	1.0303	1.0926	1.2230	1.3335
6236 6236	1.3051	1.2507	1.0876	1.8851

TABLE A-6-1 (Cont'd)

CDP	Quality Weights by Quality Type			
	1-3U HSG	3L-5 HSG	1-3U NHSG	3L-5 NHSG
6237 6237	1.0658	1.2795	1.5226	1.2627
6239 6239	0.9819	1.0968	1.2265	0.9670
6240 6240	1.0116	1.2045	1.1180	1.2955
6241 6241	1.0113	1.1155	1.0992	0.8636
6242 6242	0.8491	1.0256	1.0933	0.8636
6243 6243	0.9792	1.0529	0.9953	0.9593
6244 6244	1.0748	1.1366	1.3542	1.3784
6249 6249	1.0414	1.1486	1.1252	1.1486
6254 6254	1.1003	1.2635	1.4167	1.3784
6255 6255	0.9601	5.0541	0.9189	0.9189
6256 6256	0.9286	0.9189	0.9189	0.9189
6257 6257	0.9620	1.3784	1.1486	0.9189
6258 6258	0.9782	1.0737	1.3366	1.5425
6259 6259	1.0210	1.1027	1.2635	1.3784
6260 6260	0.9795	1.0108	1.0360	1.0670
6261 6261	0.9898	1.0031	1.0196	1.0466
6262 6262	0.9891	1.0246	1.0780	1.1054
6265 6265	0.9444	0.9512	1.0453	0.9011
6270 6270	0.9302	1.1013	1.0813	4.9560
6271 6271	0.9286	0.9011	1.0513	0.9011
6272 6272	0.9274	1.3516	0.9011	0.9011
6273 6273	0.9784	1.2565	1.4568	1.7121
6274 6274	0.9495	1.0110	1.1303	1.3516
6275 6275	1.0290	1.1264	1.0942	4.9560
6276 6276	0.9240	0.9687	0.9747	0.9011
6277 6277	0.9268	0.9011	1.0204	0.9011
6278 6278	0.9863	1.0034	1.1140	1.1890
6280 6280	1.0000	1.0000	1.0167	1.0000
6281 6281	1.0000	1.0000	1.0000	1.0000
6282 6282	1.0000	1.0000	1.0116	1.0000
6284 6284	1.0035	1.0000	1.0000	1.0000
6286 6286	0.9797	0.9957	0.9797	1.0406
6287 6287	1.0142	1.0000	1.0000	1.0000
6288 6288	0.9848	0.9848	1.0462	0.9848
6289 6289	1.0221	1.0142	1.1767	0.9420
6290 6290	1.0048	0.9745	1.0438	0.9745
6291 6291	1.0035	0.9949	1.0339	0.9797

TABLE A-6-1 (Cont'd)

CDP	Quality Weights by Quality Type			
	1-3U HSG	3L-5 HSG	1-3U NHSG	3L-5 NHSG
6292 6292	1.0064	0.9900	0.9900	1.0347
6297 6297	1.0019	1.0013	1.0024	1.0008
6301 6301	1.0426	1.1075	1.2358	1.7142
6302 6302	1.0146	1.0873	1.2892	1.3949
6303 6303	0.9770	1.0644	1.0905	1.0842
6304 6304	0.9637	1.2850	0.9637	0.9637
6305 6305	1.0075	1.4456	1.2047	0.9637
6306 6306	1.0217	1.0708	1.0351	1.2047
6307 6307	0.9891	1.0708	0.9637	1.2047
6308 6308	0.9940	0.9959	1.0842	0.9637
6309 6309	0.9866	1.0119	1.0173	0.9637
6310 6310	1.0002	0.9637	1.0173	0.9637
6311 6311	0.9735	0.9637	1.0326	0.9637
6312 6312	0.9959	1.0326	1.2047	1.4456
6313 6313	0.9637	1.0326	1.2047	1.0842
6314 6314	1.0513	1.0842	1.3653	1.2047
6315 6315	0.9786	0.9882	1.1565	0.9637
6316 6316	0.9733	1.0494	1.0271	1.1244
6319 6319	0.9694	0.9694	0.9694	0.9694
6320 6320	0.9879	1.0060	0.9799	0.9799
6337 6337	0.9927	1.2170	0.9523	5.1489
6339 6339	1.0030	1.0102	1.0535	1.1043
6341 6341	0.9477	1.1156	1.0461	1.8273
6342 6342	0.9400	0.9598	1.0247	0.9079
6350 6350	0.9538	0.9011	1.0888	1.1264
6352 6352	1.0170	1.3516	1.0012	0.9011
6355 6355	0.9950	4.9560	1.0513	4.9560
6358 6358	1.0694	0.9912	1.1264	4.9560
6359 6359	1.1071	1.0813	1.2733	4.9560
6360 6360	0.9872	1.1264	0.9830	0.9011
6361 6361	0.9912	1.3016	1.2658	1.9524
6362 6362	1.1264	1.2165	1.3967	1.6520
6363 6363	1.0508	1.0649	1.1264	2.2527
6366 6366	0.9851	1.0721	1.1815	0.9189
6368 6368	1.0488	1.1257	1.2422	2.1441
6369 6369	1.0679	1.3430	2.0293	2.0347
6370 6370	1.0161	1.0750	1.2841	1.3477

TABLE A-6-1 (Cont'd)

CDP	Quality Weights by Quality Type			
	1-3U HSG	3L-5 HSG	1-3U NHSG	3L-5 NHSG
6371 6371	0.9435	0.9360	0.9840	1.1327
6372 6372	1.1535	1.0721	1.1946	0.9189
6376 6376	0.9928	1.0252	0.9899	0.5899
6377 6377	1.0006	1.0038	0.9922	0.9642
6378 6378	0.9858	0.9641	1.0062	1.0323
6380 6380	1.0034	1.0009	1.0055	1.0000
6381 6381	1.0012	1.0016	1.0000	1.0000
6400 6400	0.9984	1.0032	1.0143	1.1868
6403 6403	0.9845	0.9637	1.0050	5.3005
6404 6404	0.9913	1.0842	1.1565	0.9637
6405 6405	0.9782	0.9637	0.9637	0.9637
6406 6406	0.9736	0.9637	1.0601	0.9637
6407 6407	0.9727	1.0440	1.0468	0.9637
6409 6409	1.0952	1.1714	2.2527	4.9560
6410 6410	1.0025	1.1264	1.0671	0.5011
6412 6412	1.0596	0.9762	1.1103	0.9011
6413 6413	1.0277	1.0338	0.9846	0.9189
6414 6414	0.9992	0.9846	1.1486	0.9189
6415 6415	0.9607	1.2378	0.9189	0.9189
6417 6417	1.0510	1.0529	1.1518	0.9189
6420 6420	1.0256	1.0570	1.0683	1.7970
6421 6421	1.0769	1.1363	0.9161	0.9161
6423 6423	0.9161	0.9161	0.9161	0.9161
6424 6424	1.0152	1.0629	1.1119	0.9161
6428 6428	1.0044	1.0784	1.0975	4.8800
6429 6429	1.0457	1.3565	1.3565	0.9161
6447 6447	0.9637	0.9637	0.9637	0.9637
6450 6450	1.3784	0.9189	0.9189	0.9189
6458 6458	1.0022	0.9642	1.0592	0.9642
6477 6477	0.9991	0.9861	0.9648	1.0199
6486 6486	1.0001	1.0076	1.0703	1.0538
6487 6487	1.0023	1.0010	1.0034	1.0029
6489 6489	0.9950	0.9882	1.0163	1.0213
6492 6492	0.9963	1.0192	1.0375	1.0793
6493 6493	0.9559	1.0156	1.0101	1.0803
6501 6501	0.9722	1.0070	0.9946	1.0734
6506 6506	0.9638	1.0026	1.0556	1.0570
6511 6511	1.0000	1.0000	1.0000	1.0000
6512 6512	0.9539	1.0004	0.9547	1.0017

TABLE A-6-1 (Cont'd)

CDP	Quality Weights by Quality Type			
	1-3U HSG	3L-5 HSG	1-3U NHSG	3L-5 NHSG
6513 6513	0.9863	0.9987	1.0047	1.0181
6515 6515	0.9977	0.9908	1.0189	1.0822
6516 6516	0.9806	0.9997	1.0342	1.0053
6517 6517	0.9847	0.9904	1.0276	1.0116
6518 6518	0.9848	0.9897	1.0153	1.0456
6519 6519	0.9781	0.9790	1.0044	1.0459
6521 6521	0.9996	0.9900	1.0009	0.9900
6522 6522	0.9866	0.9887	1.0306	1.0181
6527 6527	0.9950	0.9977	1.0155	1.0053
6528 6528	0.9845	0.9954	1.0739	0.9976
6530 6530	0.9971	0.9987	1.0147	0.9748
6537 6537	0.9808	1.1072	1.0898	1.0454
6542 6542	0.9637	1.4456	0.9637	0.9637
6543 6543	0.9637	0.9637	0.9637	0.9637
6544 6544	0.9541	0.9011	1.0213	4.9560
6545 6545	1.0004	1.0502	1.0108	0.9189
6546 6546	0.9662	1.0572	1.0660	2.6906
6549 6549	0.9011	1.3516	4.9560	0.9011
6551 6551	0.9189	2.2973	0.9189	0.9189
6568 6568	0.9899	0.9899	0.9899	0.9899
6569 6569	0.9950	0.9950	0.9950	0.9950
6570 6570	0.9899	0.9899	0.9899	0.9899
6571 6571	0.9950	0.9950	0.9950	0.9950
6572 6572	0.9899	0.9899	0.9899	0.9899
6573 6573	0.9899	0.9899	1.1549	1.1136
6574 6574	0.9899	0.9899	0.9899	0.9899
6582 6582	0.9950	0.9950	0.9950	0.9950
8562 8562	0.9940	0.9899	1.0124	0.9899
8563 8563	1.0047	1.0000	1.0091	1.0000
8564 8564	1.0000	1.0000	1.0139	1.2500
8565 8565	0.9525	0.9071	1.1339	0.9071

TABLE A-6-2

COSTS FOR QUALITY TYPES

Rating	Within Rating	Course Cost for				Course Length
		1-3U HSG	3L-5 NHSG	1-3U NHSG	3L-5 NHSG	
ABE	A	3729	3779	3808	3857	51
ABF	A	2677	2696	2583	2700	33
ABH	A	2611	2613	2671	2641	30
AC	A	8891	9047	10056	10739	100
AD	A	2148	2241	2217	2453	56
AD	B	2735	2731	2741	2752	33
AD	C	3381	3377	3387	3398	33
AD	D	3693	3688	3698	3709	33
AD	E	4783	4779	4789	4800	33
AD	F	3209	3204	3214	3225	33
AD	G	3859	3855	4602	4431	33
AD	H	4058	4054	4063	4074	33
AD	Q	4561	4557	4567	4578	33
AD	Q	2735	2731	2741	2752	33
AE	A	5998	6108	6732	7657	123
AK	A	2561	2567	2691	2654	64
AME	A	3584	3676	3842	3719	77
ANH	A	3005	3028	3175	3122	63
AMS	A	3474	3503	3626	3737	77
AO	A	3570	3740	4004	4024	78
AQ	A	9657	12274	11289	14173	170
ASE	A	5958	6581	7440	11581	110
ASH	A	4197	4104	4329	4488	83
ASM	A	3963	3921	4041	4166	30
AM	A	4986	5663	5574	5317	86
AX	A	9589	10858	11272	13220	171
AZ	A	2104	2131	2327	2136	57
BT	A	7938	8236	9222	9759	75
BT	B	6325	6445	6926	7182	54
BU	A	2995	3043	3031	3074	60
CE	A	5513	5523	6090	5757	94
CM	A	5331	5343	5765	5440	84
CTA	A	3810	4100	4782	6063	43
CTM	A	23702	21611	21272	20910	275
CTO	A	6781	6705	8765	6743	84
CTR	A	9217	9790	10924	15154	126
CTT	A	10030	10890	11930	12577	121
CTT	B	10927	11441	12868	13615	129
CTT	C	15072	17559	25281	139883	171
CTT	E	13966	13670	17509	15844	150
OK	A	3246	3289	3950	3700	68
OP	A	3799	3875	4008	3925	56
JS	A	11091	11507	11546	10251	209

TABLE A-6-2 (Cont'd)

Rating	Within Rating	Course Cost for				Course Length
		1-3U HSG	3L-5 NHSG	1-3U NHSG	3L-5 NHSG	
EA	A	4125	4007	4007	4007	73
EM	A	5332	6025	6687	7178	100
EN	A	2746	2790	2869	2964	47
EO	A	4514	4463	4528	4534	56
ETAE	A	15256	16118	16974	39018	255
ETSS	A	19419	20788	22873	28130	241
EW	A	14622	15615	14542	17141	187
FTG	A	7205	7364	7896	8394	138
FTGS	A	12782	18540	14575	114928	178
FTM	A	7095	8518	7914	8171	139
GMG	A	5776	5902	6437	8227	118
GMN	A	5632	5779	6387	9755	118
GMTA	A	5766	6137	6964	8200	120
GSE	A	23192	21707	30551	32430	118
GSM	A	14481	14388	15177	20692	131
IC	A	5929	6265	7095	6991	113
IH	A	7552	7788	8307	8024	112
HL	A	8106	7241	12141	13870	77
<hr/>						
MM	A	4745	5117	5570	6101	65
MM	B	4322	4652	4848	5595	55
MN	A	9487	10155	10707	11824	112
MR	A	4061	4432	5228	5212	70
MS	A	2327	2315	2363	2379	42
MU	A	9041	8443	8443	8443	168
OM	A	6859	7202	6859	9143	105
OT	A	10780	12690	11899	20786	77
PM	A	16160	13479	26890	73831	126
PN	A	2457	2536	2530	2711	61
PR	A	5229	5233	5376	5610	75
QM	A	1892	1986	1993	2103	40
RM	A	5244	5259	5770	5958	78
RN	B	4831	4872	5322	5575	70
SH	A	2640	2611	2502	2695	42
SK	A	2270	2251	2374	2301	54
SM	A	2172	2263	2289	2294	42
SW	A	3417	3430	3463	3546	59
TD	A	7220	7940	8693	7275	135
TM	A	4309	4578	4504	4605	66
TH	B	7755	7655	8611	12707	119
TM	C	3422	3655	3674	4039	61
UT	A	4629	4585	4752	4873	77
YN	A	2596	2786	2788	3213	61

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